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13. ABSTRACT

This report presents a comparative evaluation of the aerodynamic characteristics of an operational OH-6A helicopter as obtained from wind tunnel tests performed in the NASA-Ames 40X80 foot wind tunnel, flight tests, and digital computer studies. The objectives were: 1) Explore helicopter and rotor component stability derivatives and performance. 2) Simulate use of increased solidity by conducting a portion of the wind tunnel tests at values of thrust corresponding to values of C_T/σ approximately one-half flight values. 3) Conduct analytical studies involving use of digital computing techniques. 4) Measurement of rotor blade and rotor mast moments.

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AERODYNAMIC TESTS OF AN OPERATIONAL OH-6A HELICOPTER IN THE AMES 40' x 80' WIND TUNNEL

May 1970

Prepared Under Contract NOw66-0657-f

for

NAVAL AIR SYSTEMS COMMAND
DEPARTMENT OF THE NAVY

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ANALYSIS
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CHECKED BY S. V. LaForge

Aerodynamic Tests of an Operational OH-6A Helicopter in the Ames 40' x 80' Wind Tunnel

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1.0 SUMMARY

A wind tunnel test program was conducted on an operational prototype OH-6A helicopter in the NASA AMES 40' x 80' wind tunnel, April 23 thru May 8, 1968.

Helicopter and rotor component longitudinal stability derivatives were determined from the experimental data and compared with theoretical values obtained from a digital computer program, which numerically calculates the aerodynamic characteristics of a lifting rotor, using a strip analysis technique. Theory compares quite well with most of the experimentally determined stability derivatives. Specific exceptions are discussed in the body of this report.

Helicopter performance data measured in the wind tunnel show good agreement with flight data.

In addition to the wind-tunnel balance data, blade and other helicopter components were strain gaged for bending moment data and for control positions. Tests were conducted over a μ range from .25 to .40, plus limited data at μ = .44. These loads data show good agreement with flight data.

These wind tunnel tests and analyses were conducted under contract Now 66-0657-f.

2.0 CONCLUSIONS

The results of the experimental and analytical investigations conducted in this program indicate that numerical techniques can be used to predict rotor stability derivatives. The agreement between computations and test was excellent throughout the speed range investigated (μ = .25 to .35). It is felt that a simple computer program assuming uniform induced velocity can successfully be used to obtain rotor derivatives at the advance ratios tested.

The numerical technique was not programmed to predict the large increase in blade flapping due to retreating tip stall. Though a program which includes blade torsion as a degree of freedom and properly simulates the shift in airfoil center of pressure with blade stall can be set up to predict the increased blade flapping, such a program would be considerably more costly than that presented in this paper. Comparison of the test data with the numerical analysis indicated that retreating tip stall did not significantly change the pitching moment around the test helicopter moment center. Although the hub moment was increased by the increased blade flapping, the tilt of the rotor thrust vector was concurrently decreased due to increased drag on the retreating side. Therefore, a more sophisticated and costly program was not considered necessary to obtain valid aircraft pitching moments about its moment center.

Derivatives of the wind tunnel pitching moment data with the horizontal stabilizer both on and off were used to estimate the stabilizer effectiveness and downwash. For unstalled conditions the downwash was found to

be approximately 1.2 times the rotor induced velocity. This average value is of comparable magnitude to those presented in the technical literature. Rotor retreating tip stall reduced the effective rotor disc area, and hence, increased the downwash velocity at the stabilizer.

Level flight performance as measured in the wind tunnel shows excellent agreement with flight test data obtained from a similar ship. Loads data show good agreement with flight data.

3.0 INTRODUCTION

The Hughes Tool Company - Aircraft Division has conducted a wind tunnel test of an operational prototype OH-6A helicopter, S/N 62-4216, equipped with production blades, in the NASA AMES 40ft. x 80ft. low speed wind tunnel, April 23 thru May 8, 1968.

The major objectives of this test series were:

(1) Explore helicopter and rotor component stability derivatives and performance including establishment of any significant rotor/fuselage interference effects.

(2) Simulate the use of increased solidity by conducting a portion of the wind tunnel tests at values of thrust corresponding to values of C_T/σ approximately one-half current flight operational values.

(3) Conduct analytical studies involving the use of digital computing techniques for use in comparison with the wind tunnel experimental data.

(4) Measurement of rotor blade and rotor support mast moments for comparison with applicable theory and correlation with available flight test data. However, the sensitivity of the mast bending moment instrumentation was inadequate for proper determination of the bending moments produced by the small flapping angles and thrust vector tilt encountered during the wind tunnel test.

Data plots, tabulated results, and their analyses, including comparisons with applicable theories, relative to the above test objectives are presented herein. The test advance ratios, μ = .25 to .40, used for the majority of the testing, correspond to helicopter forward flight speeds of approximately 93 to 154 knots. Two data points were collected at μ = .44 (169 knots). Some hover runs were conducted with tunnel test section roof doors opened and closed. These were primarily for operational checkout of the helicopter and its instrumentation prior to operation of the wind tunnel. Support tare and interference runs were conducted and the data corrected for these effects.

4.0 NOMENCLATURE

4.1 Notation (Analytical)

A_b = 29.625 ft^2, main rotor blade area (4 blades)

A_{1_s} = Lateral cyclic blade angle, degrees. Positive is blade leading edge down at $\psi = 0°$

a'_s = Longitudinal tilt of thrust vector, degrees. Aft tilt is positive.

a_{1_s} = Longitudinal flapping, degrees. Positive is blade tip down at $\psi = 0°$.

B_{1_s} = Longitudinal cyclic blade angle degrees. Positive is blade leading edge down at $\psi = 90°$.

b_{1_s} = Lateral flapping, degrees. Positive is blade tip down at $\psi = 90°$.

b'_s = Lateral tilt of thrust vector, degrees. Tilt to right is positive.

C_ℓ = Section lift coefficient.

C_d = Section drag coefficient.

$C_L^* = \dfrac{L}{q\ A_b}$

$C_m^* = \dfrac{M}{q\ A_b\ R}$

$C_m/\sigma = \dfrac{M}{\rho A_b (\Omega R)^2 R}$

$C_{\mathcal{L}}/\sigma = \dfrac{\mathcal{L}}{\rho A_b (\Omega R)^2 R}$

$C_T'/\sigma = \dfrac{L}{\rho A_b (\Omega R)^2}$

$C_x = \dfrac{D}{\rho A_b (\Omega R)^2}$

D = Drag, lbs.

L = Lift, lbs.

$\mathcal{L}$ = Rolling moment, lbs-ft.

M = Pitching Moment, lbs-ft.

MC = Moment center. All moment data were reduced about a moment center located at W.L. 36.43, F.S. 101.85, B.L. 0.0. This corresponds to the intersection of the skewer pivot ball (pitch) axis with the mid-plane of the fuselage.

q = Dynamic pressure, lbs/ft^2.

R = 13.165 ft, main rotor blade radius.

V' = Tunnel speed, ft/sec.

α_s = Shaft (mast) angle, degrees.

λ = Inflow ratio.

μ = $\frac{V'}{\Omega R}$

ρ = Density, $slug/ft^3$.

σ = $A_b/\pi R^2$ = .0544, solidity ratio

$\theta_{.75}$ = Collective pitch angle, degrees.

ΩR = Tip speed, ft/sec.

4.2 Notation (Configuration)

B = Main rotor blades (4). Rotor disc = 26.33 ft in diameter. Constant blade chord = .562 ft, NACA 0015, 9° washout.

F = Model 369 (OH-6A) fuselage mounted on skewer through cargo compartment together with the Model 369 lower vertical stabilizer attached to the tail boom support (TBS). Lower vertical span = 27.5 inches from boom centerline, area = 1.78 sq ft.

H = Horizontal stabilizer. Chord = 16.5 in., NACA 0015 airfoil section, span = 67 inches from boom centerlines, dihedral = 25 deg, area = 7.68 sq ft.

K = Dummy skewer. Used only in conjunction with support tare runs to determine skewer interference corrections.

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R = Main rotor hub.

T = Tail rotor. 2 blades. Rotor disk diameter = 4.25 ft.

V = Upper vertical stabilizer. Span = 50.0 inches from boom centerline, area = 3.84 sq ft.

5.0 DESCRIPTION OF TEST CONFIGURATION

5.1 Installation on Ames Supports

The HTC-AD OH-6A light observation helicopter, flight operational prototype, S/N 62-4216, was installed in the Ames 40' x 80' wind tunnel on the tunnel three - support external balance. Photographs of this installation are presented in Figs. 1 and 2.

As illustrated in these figures and the installation drawing (Fig. 3) the ship was supported on the two forward (main) struts, located on 164" centers, by means of a 5" diameter skewer passing thru the windows of the helicopter cargo compartment. This skewer was attached by a steel truss adapter to the underside of the rotor mast base by means of the same four bolts which are used to attach the mast base to the fuselage structure. The helicopter pivoted about the center line of the 4" diameter ball socket assembly mounted atop each of the two forward struts. The center line of the 5" diameter skewer was 5.83" above the ball centers, i.e., above the pitch axis. Wind shields were provided around these forward struts. The protrusions above the wind shields and the skewer itself were unshielded from the wind. Correction for their effects were evaluated by the support tare runs which followed completion of the production data runs. The attachment of the two forward struts to the balance system scales was such as to provide readouts of lift, drag, rolling moment, yawing moment and side force.

The instrumentation and control actuator leads, the fuel line, and CO_2 fire extinguisher line were run into the helicopter thru the hollow skewer.

Fig. 3D presents a three-view drawing of the OH-6A.

5.2 Tail Boom Support

The least count of the Ames pitch balance thru the tail strut was too large to provide meaningful pitching moment data for the OH-6A helicopter configuration. Consequently HTC-AD personnel designed and fabricated a two-component strain gage balance of adequate sensitivity for the determination of the pitching moment. The HTC-AD Tail Boom Support (TBS) is shown best in figure 1, connecting the Ames tail strut to the helicopter tail support pivot.

The HTC-AD Tail Boom Support performed two additional functions. First, the spring (50 lbs./in.) and damper (standard OH-6A lag damper) combination eliminated the ground resonance problems associated with attaching the tail boom directly to the massive Ames tail strut. Second, as the load on the TBS spring changed during a test run, the fuselage angle of attack changed from the nominal value which had previously been set by the Ames tunnel operator by means of appropriate positioning of the Ames tail strut. The linear actuator, controlled by the HTC-AD console operator was used to provide vernier readjustment of the fuselage angle of attack.

5.2 Tail Boom Support (Continued)

Shaft (mast) angle of attack (α_s) was fed digitally into the Ames data acquisition system in conjunction with the external balance readings, exclusive of pitching moment. In addition α_s was manually recorded by the helicopter control console operator.

5.3 Support Interference Configuration

In order to determine a correction to account for the interference of the skewer support during the production data tests, an auxiliary support was utilized as illustrated in figure 3B. Data were collected over a range of α_{shaft} at two dynamic pressures, horizontal stabilizer on and off, with and without a dummy skewer installed. The incremental effect due to the presence of the skewer was used as a correction in the Ames balance data reduction program, and to the pitching moment data obtained from the Tail Boom Support balance. The pitching moment correction was small.

5.4 Helicopter Control Console

The helicopter control console, designed and fabricated by HTC-AD, was located in the wind tunnel control room so as to provide optimum coordination between the wind tunnel operators and the helicopter operators. This control console provided remote control and monitoring of the helicopter. For operating effectiveness, it was divided into two adjacent panels: The left being the Flight Control Operator's Station; the right, the Engine Control Operator's Station.

At the Flight Control Station were those switches and panel monitoring instruments required for establishing aircraft angle of attack, tail support angle of attack, lateral cyclic position, longitudinal cyclic position, and pedal position. In addition, there were instruments for monitoring the lateral flapping and the longitudinal flapping. An oscillograph record switch was also located on this panel. However, during actual test operations, the oscillographs were operated and monitored by HTC-AD personnel who marked the applicable data point number on each record as it was taken.

The Engine Control Station had the switches for 110V AC power, fuel valve, starter, throttle, N_2 beeper, and collective. Panel instruments were provided for monitoring collective position,

5.4 Helicopter Control Console (Continued)

throttle, N_2, rotor rpm, N_1, TOT, torque, DC Bus amperes, engine running-time clock, engine oil pressure, and engine oil temperature. Panel warning lights were provided as monitors of MR transmission oil pressure, oil temperature, and chip, TR transmission chip, engine chip, and fuel clog.

Both the Flight Control Operator and the Engine Control Operator maintained a running log of the operational data on his respective console coded to the Run Number and Data Point Number. In addition the 50 channel oscillograph record number was logged. The layout of the panels on the control console are detailed on the Ref. 1 drawing.

The primary rotor controls, collective, longitudinal cyclic, and lateral cyclic, were variable and powered by electrically driven screw jacks mounted in the cockpit. The rotor power and speed were controlled through the engine fuel control and the engine governor. There was a remote "beeper" switch on the control console to change the governor rpm setpoint.

5.5 Instrumentation

In addition to the Ames external balance data, up to 53 channels of oscillograph data were recorded throughout the test on two oscillographs, one of 50 channels, the other of 18 channels directwriting. The latter was used to monitor during each run significant load values, principally pitch link load, mast longitudinal bending and tail boom vertical bending to insure that the aircraft was not being subjected to excessive loads.

The list of the oscillograph recorded data channels is presented in Table I. Main rotor data channels, i.e., items 1 thru 17 of this Table, in addition to blade flapping position, required use of a multi-channel slip ring assembly mounted atop the rotor mast assembly. The electrical leads from the stator side of the slip ring assembly were fed down thru the hollow mast. Mast bending strain gage leads did not require use of the slip ring since on the OH-6A helicopter the mast is fixed, the drive shaft rotating inside the mast to drive the rotor blades. The rotor blade loads are transferred thru two main bearings to the fixed mast.

The outputs of the control position potentiometers were fed to the control console meters as well as to the oscillograph. A blade flapping resolver was installed on blade No. 1. The resolver was mechanically constructed so that its flapping readout

5.5 Instrumentation (Continued)

was not affected by extension of the blade retention straps under centrifugal loading nor by feathering nor by lead lag motion of the blade. Suitable electronic circuitry was provided to resolve longitudinal flapping and lateral flapping and thus give a direct continuous reading on the two respective meters located on the control console. In addition, the output of the flapping resolver potentimeter was recorded on channel 22 of the 50 channel oscillograph.

In parallel with the HTC-AD oscillographs, several of the data channels were recorded on magnetic tape for subsequent automated data reduction by NASA-Ames personnel.

6.0. CALIBRATION AND DATA REDUCTION

6.1 Balance Calibration:

The three-support external balance of the 40' x 80' ft. wind tunnel had been previously calibrated by NASA - AMES personnel in accordance with the NASA - AMES standard procedures.

6.2 Balance Data:

Balance data were reduced in accordance with the NASA - AMES standard computer program. Weight tare corrections and support interference tare corrections based on the support interference runs were incorporated in the data reduction program. The final NASA reduced data were made available in a tabulated format appropriately coded per run number and data point number.

Pitching Moment Data from the AMES three - support external balance are not usable. It had been established in conferences between AMES and HTC-AD personnel prior to the test that the least count of the AMES balance was too great to achieve meaningful accuracy in the pitch data. Consequently in lieu of the AMES balance, the pitching moment data were obtained by means of an HTC-AD designed and fabricated strain gage balance on the tail boom support.

The NASA reduced data are presented in Appendix A, pages A-1 through A-51.

6.3 Tail Boom Support Balance:

Because of the lack of sensitivity of the AMES pitch balance, HTC-AD designed a two component strain gage balance on the tail boom support. This balance measured the axial and normal forces at the tail pivot attachment point. Readout was on channels 8 and 9 of the HTC-AD 18 - channel oscillograph. In addition these data were recorded in parallel on magnetic tape. The tape data were reduced by the AMES computer program and transmitted to HTC-AD in tabular format. Sufficient oscillograph data points were read at HTC-AD to establish the validity of the automated reduction. The AMES values were then used to compute the pitching moments about the helicopter pitch axis.

Pitching moment data were corrected for weight tares and for support interference prior to conversion to the coefficient format used in the data presentation graphs. Values are tabulated on pages A-52 through A-55 of Appendix A.

Calibration of the tail boom support balance was conducted over the applicable load range in the HTC-AD laboratory prior to the tunnel test. Standard oscillograph R-Cal. procedures were used throughout the actual test.

6.4 Strain Gage Instrumentation:

The strain gage instrumentation listed in Table I was calibrated at HTC-AD prior to shipment of the helicopter to the wind tunnel. Since this instrumentation was identical to that used on a fully

instrumented flight test helicopter, standard calibration procedures were employed by HTC-AD calibration and electronic personnel. Standard oscillograph R-Cal. procedures were used throughout the actual test.

6.5 Position Calibrations:

Following installation in the wind tunnel, with the helicopter set at α_s = zero, wind off, final calibrations were conducted for all position potentiometers utilizing a precision inclinometer or scale as required. The oscillograph readouts and control console readings were simultaneously recorded against the inclinometer (or scale) readings.

7.0 TEST PROGRAM

7.1 Test Procedure

Prior to initiation of a run, the angle of attack was set by wind tunnel personnel to give an α_{shaft} = zero. All zeros were recorded. The helicopter engine was started and brought up to operational rpm, initially 97% (456 rpm). This afforded a nominal 3% adjustment for maintaining a constant advance ratio, since as tunnel temperature increased, the tunnel velocity increased to maintain constant tunnel dynamic pressure. Prior to starting the tunnel, collective was increased to give approximately 1000 lbs. lift on the tunnel external balance. As the tunnel was brought up to speed, the longitudinal and lateral cyclic controls were adjusted to maintain zero longitudinal and lateral tip path plane tilt relative to the main rotor shaft.

7.2 Test Variables

The variables investigated covered α_{shaft}, collective, longitudinal cyclic, and lateral cyclic at several advance ratios for various helicopter configurations. In addition advance ratio was varied about the basic values by variation of rotor rpm at three fixed wind tunnel velocities.

Test advance ratios and corresponding tunnel dynamic pressures were:

μ	q, lbs/ft^2
.25	29
.30	41
.35	56
.40	73
.44	90 (2 points only)

7.3 Test Log

A complete log of the tunnel test runs, the oscillograph data records, and tabulated reduced data for this test series are available in the HTC-AD Technical Department files. Twenty-three data runs (470 data points), four support tare runs (52 data points), and seven static weight tare runs were made. Helicopter engine operating time was 35.7 hours. Tunnel occupancy, including setup and teardown was 24 shifts. The tunnel operated on a two shifts perday basis, 5 days/week.

8.0 DATA ANALYSIS

8.1 Method of Computing Theoretical Stability Data.

The theoretical method used herein to compute stability derivatives is simple and is inexpensive to run. The comparisons of theory and test data show excellent agreement. Consequently it is felt that this computing method is adequate for simple helicopters of modest speed ($\mu \leq 0.35$). Some of the test data show evidence of retreating tip stall. For these the agreement with theory is only fair. A few data points were run at $\mu = 0.4$. These data are quite scattered and the agreement with theory is marginal.

The theoretical stability data used to compare with the wind tunnel test data were obtained by means of a digital computer program, based on References 2 and 3, which numerically calculated the aerodynamic characteristics of the lifting rotor using the assumption of uniform induced velocity and ignoring the effects of blade flexibility. This program employed a strip analysis in computing the aerodynamic forces on the blades. The aerodynamic forces, in conjunction with centrifugal, inertial, and weight forces are combined to solve for the blade flapping. Knowing the flapping, the local blade angle of attack and the aerodynamic forces for a trim condition are obtained. The angle of attack and Mach number of each local blade section together with the tabulated blade characteristics determine the section C_ℓ and C_d. The lift, drag, and torque of each section is then computed.

Since the rotor blades of the test helicopter incorporated the NACA 0015 airfoil section, the tabulated values of C_ℓ and C_d were obtained from the data of Reference 6. This reference presents C_ℓ and C_d as a function of angle of attack and Mach number. These coefficients were synthesized from hovering data of a rotor with a 0015 airfoil section.

In addition to the blade section aerodynamic characteristics and the physical characteristics of the rotor, the other inputs to the computer program include: collective ($\theta_{0.75}$), longitudinal and lateral cyclic pitch (B_{1_s}, A_{1_s}), inflow ratio (λ), and advance ratio (μ).

The outputs are longitudinal and lateral flapping (a_{1_s} and b_{1_s}), thrust, hub moment, thrust vector tilt (a'_s and b'_s), and shaft angle of attack (α_s).

In performing the wind tunnel test the cyclic control was positioned so that the aircraft was trimmed to zero longitudinal flapping angle, a_{1_s}. In the digital computations this trim condition was obtained by holding the collective pitch at the corresponding test value and varying the longitudinal cyclic pitch, B_{1_s}, and inflow ratio, λ, to achieve the test values of thrust and zero flapping. After the trim condition was obtained, small perturbations were made in the proper parameters to compute the derivatives. Since shaft angle, α_s, is an output, an iteration has to be made to hold α_s constant when

obtaining the derivatives with respect to control positions and μ. Page 25 presents a flow diagram describing each step in the iteration. Additional details of the computer program are described in Appendix C.

Figure 4 shows a schematic side view of the test setup. All moments were measured around the moment center shown. Therefore, the calculated hub moments and shears were transferred to the moment center for comparison with wind tunnel data.

8.2 Summary of Measured and Theoretical Stability Derivatives

The following table summarizes the rotor stability derivatives obtained during the wind tunnel test and compares them with computed derivatives. The more important longitudinal derivatives are discussed in detail in later sections of this paper.

The derivatives with respect to collective and cyclic stick were obtained using the stick motions measured at the console. Plots of console collective pitch angle vs blade angle measured on the oscillograph record show that the flexibility of the control system reduces the angle of the blade by 11% to 14%. The cyclic stick is more than twice as flexible as the collective stick (stiffness of 7000 in-lb/rad as compared with 16,370 in-lb/rad for collective), so it is expected that the cyclic angle at the blade would be reduced 25% to 31%. The deflection of the control system is a function of the pitch link load; therefore, the difference between the console measured angle and the blade angle is a function of flight condition.

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COMPUTER PROGRAM FLOW CHART

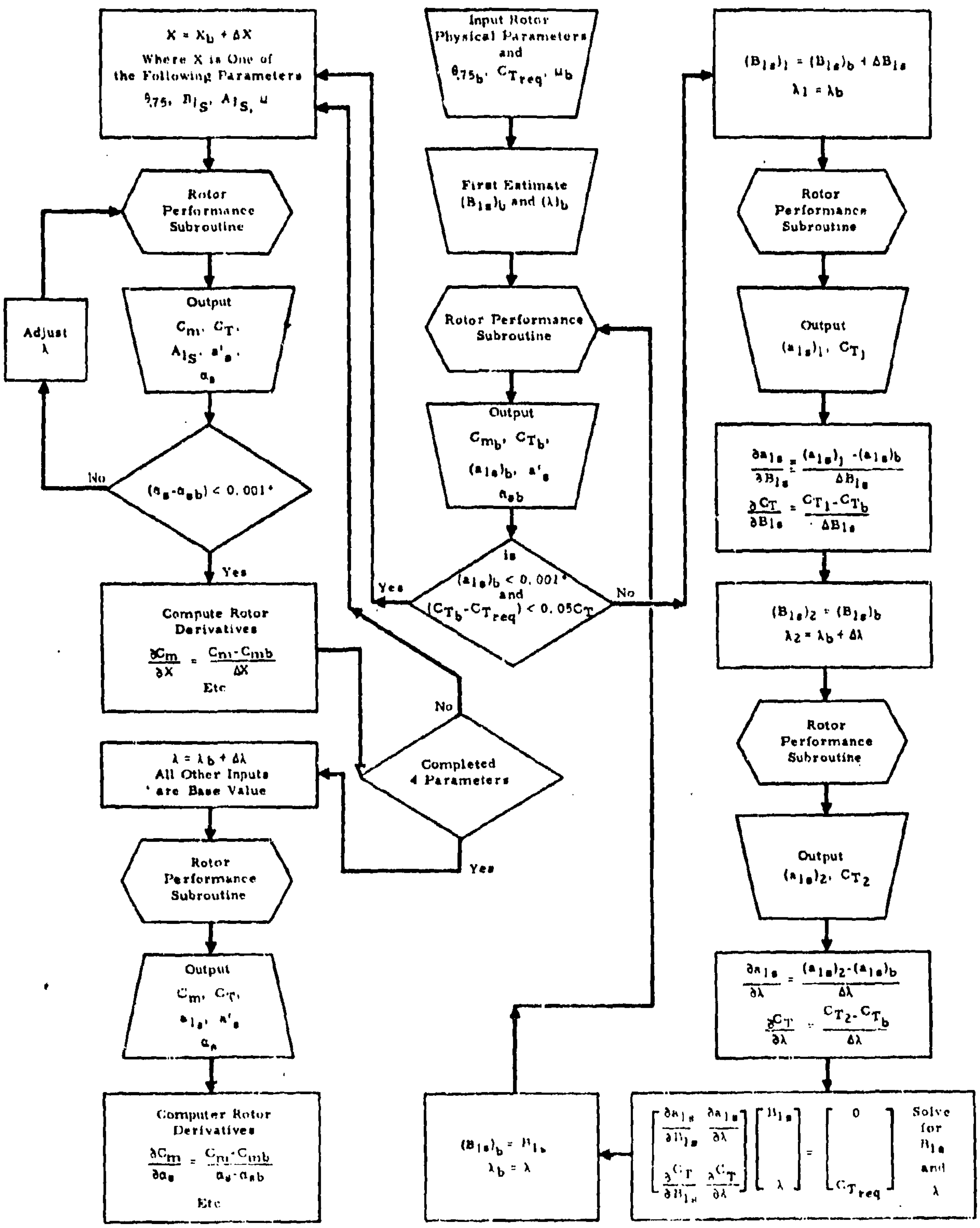

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TABLE I. STABILITY DERIVATIVES

Derivative	μ = 0.25		μ = 0.30		μ = 0.35	
	Test	Theory	Test	Theory	Test	Theory
$\partial a_{1_s}/\partial \alpha_s$, deg/deg	0.15	0.14	0.32	0.20	0.25	0.28
$\partial C_m/\sigma/\partial \alpha_s$, /deg	0.00014	0.00013	0.00019	0.00018	0.00025	0.00024
$\partial C'_T/\sigma/\partial \alpha_s$, /deg	0.0052	0.0056	0.0065	0.0069	0.0086	0.0086
$\partial C_\ell/\sigma/\partial \alpha_s$, /deg	0.00009	-0.00004	0.00010	-0.00005	0.00025	-0.00004
$\partial a_{1_s}/\partial B_{1_s}$, deg/deg	-0.98	-1.17	-1.08	-1.23	-1.25	-1.36
$\partial C_m/\sigma/\partial B_{1_s}$, /deg	-0.0009	-0.0013	-0.0009	-0.0013	-0.0010	-0.0014
$\partial C'_T/\sigma/\partial B_{1_s}$, /deg	0.0040	0.0056	0.0048	0.0070	0.0058	0.0082
$\partial C_\ell/\sigma/\partial A_{1_s}$, /deg	0.0008	0.0012	0.0008	0.0011	0.0009	0.0011
$\partial a_{1_s}/\partial \theta_{0.75}$, deg/deg	0.60	0.82	0.76	0.96	1.35	1.43
$\partial C_m/\sigma/\partial \mu$,	0.014	0.013	0.015	0.015	0.007	0.010

This table shows good agreement between theory and test in the speed stability and the derivatives with angle of attack, except for the derivative of roll moment with angle of attack. These test data show hysteresis and the differences have not been resolved. The theoretical derivatives with collective pitch are 11% to 14% high and the derivatives with cyclic pitch are 25% to 31% high due to the flexibility in the control system. It can be seen from the table that when the control system flexibility is accounted for, there is good agreement between theory and test.

8.3 Rotor Flapping

Figure 5 presents a plot of longitudinal blade flapping versus shaft angle of attack. The theory, shown as a dashed line, compared very well at μ = 0.25, but deviated from test at the higher values of μ. The theoretical retreating tip angle of attack is printed next to the trim point. One point (μ = 0.35)and $\theta_{0.75}$ = 10°) has a retreating tip angle of attack well into the stalled region. This test point shows the effect of stall in increasing the change in blade flapping with shaft angle of attack. Stall reduces the lift on the retreating blade and also shifts the airfoil center of pressure towards the trailing edge which tends to twist the blade nose down. Both of these effects increase flapping. The theoretical program accounted for the decrease in lift but assumed rigid blades. Therefore, the effect of dynamic twisting of the blade could not be determined.

Figure 6 presents a plot of the change in longitudinal cyclic pitch with change in shaft angle of attack to maintain zero flapping. The values of $\partial B_{1_s}/\partial \alpha_s$ from test data are somewhat greater than theory. The values of B_{1_s} were obtained from stick position as measured in the cockpit. Due to the flexibility of the control system, the actual values of B_{1_s} at the rotor are less than the values calculated based on the static calibration. Flexibility was discussed in section 8.2.

8.4 Rotor Pitching Moment Derivatives

Figure 7 presents a plot of rotor pitching moment versus shaft angle of attack. The test points were obtained by subtracting the moment due to fuselage and rotor hub from the total pitching moment; thus, they represent the moment due to blades only (except for blade-fuselage interference which should be small).

Figure 8 presents derivatives of $\partial C_m/\sigma / \partial \alpha$ obtained by reading the slopes of Figure 7. The agreement between theory and test is excellent. At $\theta_{0.75} = 10°$, $\mu = 0.35$ the agreement with test is good even though the measured flapping was considerably greater than theory. This point is in the retreating tip stall region, which increases the drag on the retreating blade and tends to reduce the aft tilt of the rotor thrust vector. Therefore, when the moment is transferred to the test moment center (aircraft center of gravity), the increased nose up moment due to increased flapping is offset by the reduced moment due to reduced thrust vector tilt. At $\mu = 0.4$ there is a considerable amount of scatter in both the flapping and pitching moment data points, so the comparison of theory with test data is inconclusive.

8.5 Thrust Derivative

Figure 9 presents C'_T/σ vs α_s for the values of advance ratios tested both horizontal stabilizer on and off. Figure 10 presents the derivative $\partial C_T'/\sigma / \partial \alpha_s$ vs μ. These derivatives were ob-

tained from the slopes of the curves in Figure 9. Theory is also shown on Figure 10 and is in excellent agreement with test data.

8.6 Stabilizer Effectiveness with Angle of Attack

Figure 11 presents pitching moment data for the complete helicopter in the form of C_m/σ vs α_s with the horizontal stabilizer "on" and "off". Figure 12 presents the slopes of the data in the form of $\partial C_m/\sigma / \partial \alpha_s$ as a function of μ. (At μ = 0.4, there are no data "horizontal-on".) This figure was used to estimate the ratio of actual to theoretical downwash at the horizontal stabilizer. At μ of .25 and .30, this ratio is equal to 1.2. At μ = .35, the ratio is 1.0 for the unstalled test and 2.8 for the test conducted with retreating tip stall. Rotor stall reduces the effective rotor disc area, and hence, increases the downwash velocity. Thus, the high value of induced velocity can be expected. The value of induced velocity ratio of 1.2 is almost identical to the measured ratio presented in Figure 33 of Reference 7. This reference presents data obtained from a wake survey of the induced flow near a rotor.

8.7 Roll Derivative with Angle of Attack

Figure 13 presents C_{ℓ}/σ vs α_s for various conditions. Figure 14 presents the roll derivative with shaft angle as a function of μ. The theory shown does not agree with the test. The theoretical derivative of lateral flapping b_{1_s} vs rotor shaft angle, α_s, is positive, but the theoretical derivative of lateral thrust vector

tilt, b'_s vs α_s is negative, therefore, when the moment was transferred to the CG, the total became negative. The difference between theory and test is unexplained but is probably due to the low sensitivity of the balance system in relationship to the small helicopter rolling moments.

8.8 Longitudinal Stick Motion Derivatives

Figure 15 presents a plot of longitudinal flapping angle a_{1_s} with incremental longitudinal cyclic pitch ΔB_{1_s}, determined from longitudinal stick motion. Figure 16 presents the flapping derivative $\frac{\partial a_{1_s}}{\partial B_{1_s}}$ as a function of μ. The test data indicate the flapping, due to stick motion, is less than theory. This is attributed to the flexibility in the control system. The longitudinal cyclic pitch system flexibility is approximately twice that of the collective system (see 8.2).

Figure 17 presents pitching moment vs ΔB_{1_s}, horizontal stabilizer 'off". The theory is also shown on this Figure. Figure 18 presents pitching moment vs ΔB_{1_s}, horizontal stabilizer "on". Figure 19 presents $\frac{\partial C_m/\sigma}{\partial B_{1_s}}$ obtained from the slopes of figures 17 and 18, and also shows the theory. As expected, the test is lower than the theory, due to the flexibility of the control system. Figure 19 shows that the derivative $\frac{\partial C_m/\sigma}{\partial B_{1_s}}$ becomes more negative with the horizontal stabilizer on. This is due to the change in downwash at the stabilizer, which is a function of $\frac{\partial C_T'/\sigma}{\partial B_{1_s}}$. The derivative

$\frac{\partial C_T'/\sigma}{\partial B_{1_s}}$ increases with μ; therefore, the difference in moment, stabilizer on versus off, should increase with forward speed. Figure 19 shows this trend, but the absolute value of the difference due to the stabilizer appears high. Figure 20 presents $\frac{\partial C_T'/\sigma}{\partial B_{1_s}}$ vs μ both theory and test. The test results are less than the theory due to the control system flexibility.

8.9 Lateral Stick Motion Derivatives

Figures 21 and 22 present lateral flapping, b_{1_s}, and rolling moment, C_ℓ/σ, respectively, as a function of incremental lateral cyclic pitch, ΔA_{1_s}. Figure 23 presents the derivative of rolling moment with lateral cyclic pitch $\frac{\partial C_\ell/\sigma}{\partial A_{1_s}}$ taken from Figure 22. Due to flexibility in the lateral control system the test flapping and roll moments are less than theory. Both the theory and the test indicated the rolling moment derivative is independent of θ at a given value of advance ratio μ.

8.10 Collective Stick Motion Derivatives

Figures 24 and 25 present longitudinal flapping a_{1_s} and lateral flapping b_{1_s} vs $\theta_{0.75}$. As discussed earlier, the flexibility of the control system results in a reduction in the angle of attack change at the rotor. It is expected that the theory will be 11% to 14% greater than test. This is true except for the run at $\mu = 0.35$. The trim points have a theoretical retreating tip angle of attack of 11.2° which is into the stall region. As stall tends to increase

the derivative of flapping with collective pitch, this effect offsets the reduction due to control system flexibility.

8.11 Speed Stability

Figures 26 and 27 present C_m/σ and C_T'/σ vs μ respectively. These tests were conducted with the horizontal stabilizer installed. The variation of μ was obtained by changing rotor speed, rather than tunnel speed. Consequently, the stabilizer lift is affected only by the change in downwash due to the change in rotor thrust. The thrust derivative is small; therefore, the effect of the stabilizer on the pitching moment derivative is also small.

The speed stability agreement, as shown in Figure 26, is very good. As noted previously, the case of $\mu = 0.35$, $\theta_{0.75} = 10$ degrees, is well into retreating tip stall, which increases the drag on the retreating side, resulting in a forward increment of tilt of the thrust vector. The moment change due to the change in thrust vector tilt appears to be greater than the moment change due to increased flapping, causing an unstable variation of pitching moment with μ. The theoretical retreating tip angle of the $\mu = 0.35$, $\theta_{0.75} = 8$ degrees point is equal to 20 degrees. Thus, the stall is even greater than the $\theta_{0.75} = 10$ degrees point discussed earlier. As expected, the slope of this case deviates from theory to a greater extent.

Figure 27 indicates theory underestimates $\frac{\partial C_T'/\sigma}{\partial \mu}$ by a small amount. The test values of C_T'/σ include the download on the stabilizer, therefore, test data includes a small term that is neglected in the theory.

8.12 Level Flight Performance.

For helicopter level flight, the thrust is equal to the weight and the propulsive force must equal the drag. This condition is obtained when $C_X = 0$ and $\frac{C_T'}{\sigma} = \frac{W}{\rho A_b (R\Omega)^2}$ The trim point for each μ tested was obtained from crossplots of θ and α_s to obtain the rotor power coefficient $C_P = \frac{550\ HP}{\rho A_b (R\Omega)^3}$. Before this could be done, C_X had to be corrected for the tare of the tail support. Also, in order to compare with flight power measurements contained in reference 8, the drag of the instrumentation wire pack, which was not included in the tare support setup, had to be removed. This drag was estimated to be one square foot of parasite area. A comparison at $W = 2090$ pounds, $\Omega R = 648$ ft/sec, and $\rho = .002306$, is shown in figure 28. These data show excellent agreement with the flight data of reference 8.

8.1 Loads Comparisons

Comparison plots are presented for the main rotor blade 15% flapwise cyclic bending and main rotor pitch link cyclic load as obtained from the wind tunnel test and from recent flight tests. Both sets of loads data are plotted as functions of C_P/σ and C_T/σ.

Examination of figure 29, 15% flapwise cyclic bending, shows some scatter in the wind tunnel data, but no pronounced trend with either C_P/σ or C_T/σ. The flight test data also shows scatter which is generally typical of this type of flight test data. The data do show reasonable agreement. The flight test data average at a somewhat higher load level than do the wind tunnel data. However, since the flight test data are grouped at the higher values of C_T/σ and C_P/σ, this result is not unexpected. It is significant to note that the endurance limit was not exceeded for any test condition including the high μ of the wind tunnel test (equivalent to a forward speed of 154 knots, 2 points at 169 knots).

Examination of figure 30, pitch link cyclic loads, shows generally less scatter than the blade bending moment data. Otherwise, the conclusions are similar to those above.

Time histories of rotor loads as obtained from flight test and from the wind tunnel test are presented in Fig. 35. There is fair agreement between the two sources of data.

8.14 Collective Control System Flexibility

The values of collective angle, $\theta_{0.75}$, as used herein are those read at the console, i.e., a direct function of cockpit stick position. From HTC-AD oscillograph records, the pitch link average load has been read for selected runs and plotted in Figure 31 as a function of $\theta_{0.75}$ at the console. The slopes of the lines faired thru these data points, i.e., $\frac{dP}{d\,\theta_{console}}$, have been used in conjunction with the value of collective control system stiffness, 16,370 in-lbs/radian, to calculate the expected change in blade angle as read by the potentiometer on the blade feathering axis and recorded on the oscillograph.

For example at $\mu = 0.25$

$$\frac{\partial\theta\ \text{flex.}}{\partial\theta\ \text{console}} = \frac{6.06\ \text{in.} \times 57.3}{16{,}370\ \frac{\text{in-lbs}}{\text{rad.}}}\ \frac{dP}{d\,\theta_{console}}\ \frac{\text{lbs}}{\text{degs}} = .100$$

$$\Delta\theta\ \text{console} - \frac{d\theta\ \text{Flex.}}{d\theta\ \text{console}} \times \Delta\theta_{console} = \Delta\theta\ \text{oscillograph}$$

$$\frac{d\theta\ \text{console}}{d\theta\ \text{oscill.}} = \frac{1}{1 - \frac{d\theta_{flex}}{d\theta_{console}}} = \frac{1}{1 - .100} = 1.11$$

In a similar manner values of $\frac{d\theta_{console}}{d\theta_{oscill.}}$ of 1.13 and 1.14

were determined for $\mu = 0.30$ and $\mu = 0.35$ respectively. These slopes have been utilized in fairing the lines thru the correlation data plots of Figure 32 which presents $\theta_{console}$ versus $\theta_{oscill.}$. Taking into account the scatter in these data, the agreement between the slopes determined empirically as discussed above and the actual data is quite satisfactory Flexibility has been discussed above under 8.12.. .

8.15 Fuselage Characteristics

Plots of lift coefficient (C_L) and pitching moment coefficient (C_m*) are presented in Figures 33 and 34 for the Rotor Off Configuration. These figures also present data collected on a 1/3 scale model of the helicopter in the Northrop/Norair wind tunnel (Ref. 4). The pitching moment curves are in good agreement for both horizontal stabilizer on and off. The Ames data show a slightly reduced slope for C_L versus α_s in both cases, as well as a negative shift in the angle for zero lift, which is unexpectedly large for horizontal stabilizer off. Figure 33 also presents a computed value of pitching moment based on the Multhopp body formula of reference 5 for a fuselage fineness ration of 2.3, i.e.:

$$\frac{C_m^*}{\alpha} = \left(\frac{\text{Vol.}}{28.7}\right)\left(K_2 - K_1\right)\frac{1}{A_b R} = \left(\frac{172}{28.7}\right)\left(.47\right)\frac{1}{390} = .0072$$

This slope is somewhat higher than those shown by the full scale data and the Ref. 4 data. The Ref. 4 data were collected on a 1/3 scale model tested at a RN/ft. corresponding to that of a full scale ship at 55 knots.

9.0 LIST OF REFERENCES

1. HTC-AD Drawing 369-A-9[illegible], "Control Console Layout"

2. NACA TN 3366, "A Method for Studying the Transient Blade-Flapping Behavior of Lifting Rotors at Extreme Operating Conditions," By Alfred Gessow and Almer D. Crim, dated January 1955

3. NACA TN 3747, "Equations and Procedures for Numerically Calculating the Aerodynamic Characteristics of Lifting Rotors," By Alfred Gessow, dated october 1956

4. Report HTC-AD 369-A-8012 "Aerodynamic Tests of a 1/3 Scale Model 369 A Helicopter at Northrop/Norair Wind Tunnel - Test Series No. 9," April,1967

5. Perkins and Hage, "Airplane Performance, Stability and Control," EQN. 5-26, page 226

6. NACA TN 4356, "Effects of Compressibility on Rotor Hovering Performance and Synthesized Blade-Section Characteristics Derived from Measured Rotor Performance of Blades Having NACA 0015 Airfoil Tip Sections", by James P. Shivers and Paul J. Carpenter, dated September 1958

LIST OF REFERENCES (continued)

7. NACA TN 3691, "Analysis and Comparison with Theory of Flow Field Measurments Near a Lifting Rotor in the Langley Full-Scale Tunnel," by Harry H. Heyson, dated April 1956.

8. USATECOM Project No. 4-3-0250-51/52/53, Part Two of Two Parts, "Report of the Engineering Flight Test Performance Phase of the OH-6A Helicopter, Unarmed (Clean) and Armed with the XM-7 or XM-8 Weapon Subsystem," U. S. Army Aviation Test Activity, Edwards AFB, California, dated August 1964.

TABLE I

List of Oscillograph Recorded Data Channels

Item No.	Description	50 Channel Oscillograph Channel No.	18 Channel Direct-Writing Oscillograph Channel No.
1	M/R Blade, Flapwise Bending, 15%	-	1
2	M/R Blade, Flapwise Bending, 17%	2	-
3	M/R Blade, Flapwise Bending, 30%	3	-
4	M/R Blade, Flapwise Bending, 50%	4	-
5	M/R Blade, Flapwise Bending, 70%	5	-
6	(spare)	-	-
7	M/R Blade, Chordwise Bending, 17%	6	-
8	M/R Blade, Chordwise Bending, 50%	7	-
9	M/R Drive Shaft Bending, No. 1	8	-
10	M/R Drive Shaft Bending, No. 2	9	-
11	M/R Drive Shaft Torque	10	-
12	M/R Pitch Link Load	-	2
13	M/R Feathering Bearing Support, Tension	12	-
14	M/R Blade Retention Strap, Tension	-	16 (a)
15	M/R Blade Retention Strap, Bending	-	3
16	M/R Lead-Lag Position	15	-
17	M/R Angle Position, Feathering	16	-
18	M/R Mast Lateral Bending (outside upper)	17	-
19	M/R Mast Lateral Bending (outside lower)	-	4
20	M/R Mast Longitudinal Bending (outside upper)	19	-
21	M/R Mast Longitudinal Bending (outside lower)	-	5
22	M/R Mast Lateral Bending (inside)	20	-
23	M/R Mast Longitudinal Bending (inside)	21	-

Note: (a) For run 3 only, CH. 16 was long. accel. and CH. 17 was lateral accel.

ANALYSIS
PREPARED BY R. E. Rohtert
CHECKED BY

Aerodynamic Tests of an Operational OH-6A Helicopter in the Ames 40' X 80' Wind Tunnel

List of Oscillograph Recorded Data Channels (Continued)

Item No.	Description	50 Channel Oscillograph Channel No.	18 Channel Direct-Writing Oscillograph Channel No.
24	Longitudinal Control Link Load	-	6
25	Normal Acceleration at c.g.	-	7
26	Ship's Airspeed	26	-
27	Engine Torque Pressure	27	-
28	Longitudinal Cyclic Position	28	-
29	Lateral Cyclic Position	29	-
30	Rudder Pedal Position	30	-
31	Collective Position	31	-
32	Throttle Position	32	-
33	Tail Boom Support, Axial Load	-	8
34	Tail Boom Support, Vertical Load	-	9
35	Tail Boom Support, Position	33	-
36	Tail Boom Vertical Bending, Forward	-	10
37	Tail Boom Horizontal Bending, Forward	-	11
38	Tail Boom Torque, Forward	-	12
39	Tail Boom Vertical Bending, Aft	-	13
40	Tail Boom Horizontal Bending, Aft	-	14
41	Tail Boom Torque, Aft	-	15
42	Upper Vertical Stabilizer, Lateral Bending	34	-
43	Upper Vertical Stabilizer, Lateral Bending (near root)	35	-
44	Horizontal Stabilizer, Flapwise Bending (near root)	36, 41 (b)	-
45	Horizontal Stabilizer, Flapwise Bending (near strut attach.)	37	-
46	Horizontal Stabilizer Chordwise Bending	38	-

Note: (b) CH. 36 shifted to CH. 41 (4-17-68)

List of Oscillograph Recorded Data Channels (Continued)

Item No.	Description	50 Channel Oscillograph Channel No.	18 Channel Direct-Writing Oscillograph Channel No.
47	Horizontal Stabilizer Strut Load	39	-
48	RPM (1 per rev)	50	-
49	Skewer Position (ship α)	40	-
50	Blade Flapping Position from Flapping Resolver	22	-
51	Blade Flapping Position from Flapping Potentiometer	43	-
52	Timing Code	48	-
53	Timing Code		17 (a)

Note: (a) For run 3 only, CH. 16 was long. accel. and CH. 17 was lateral accel.

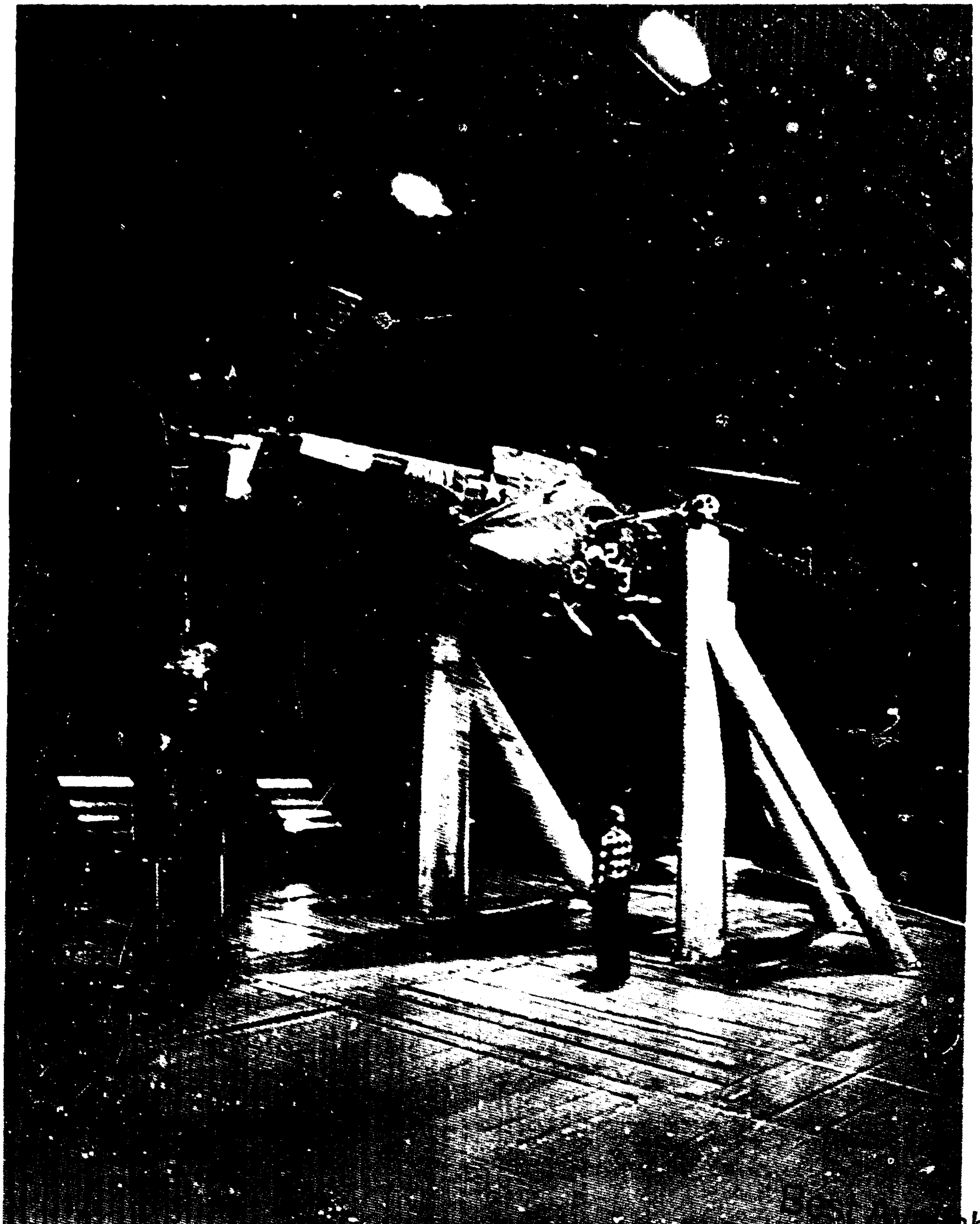


Figure 1. OH-6A Wind Tunnel Installation - Right-Rear View

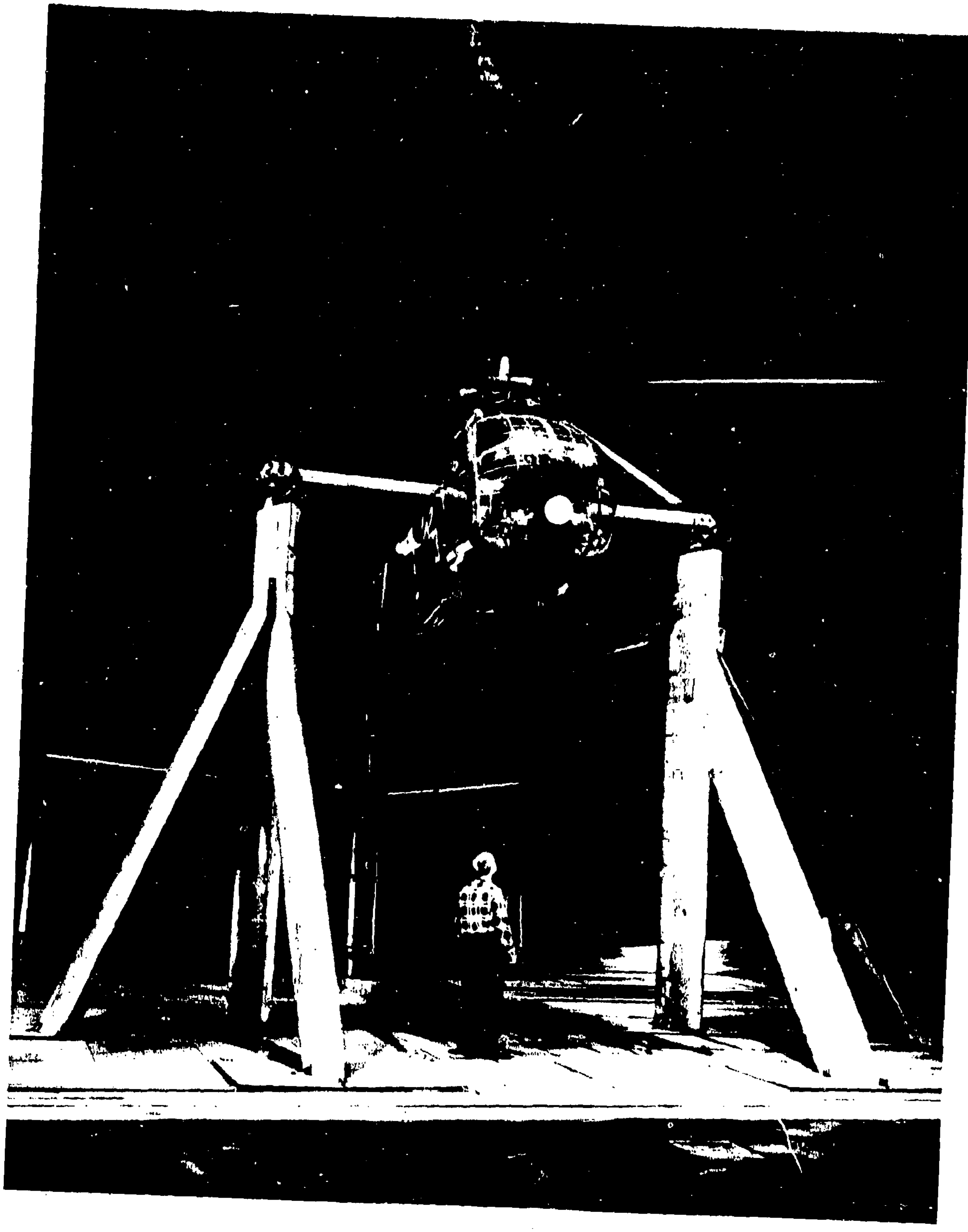
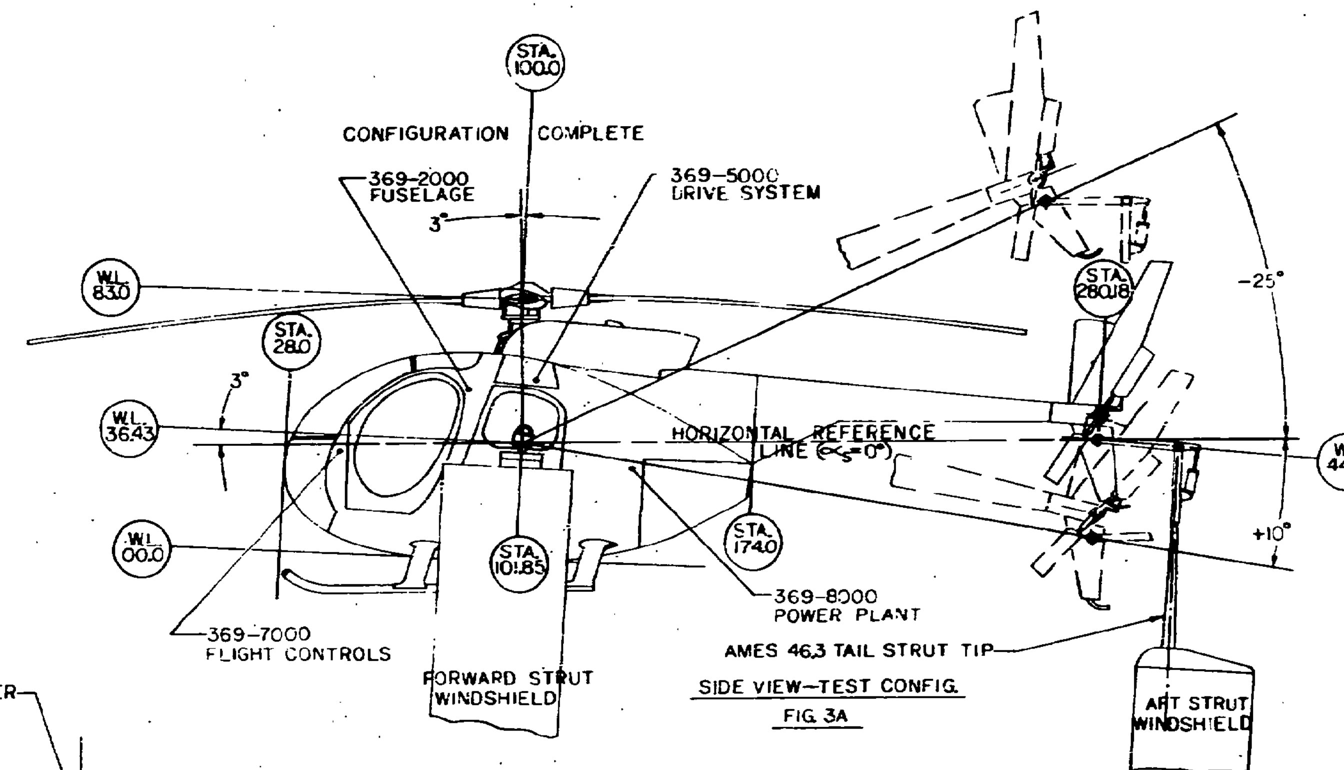
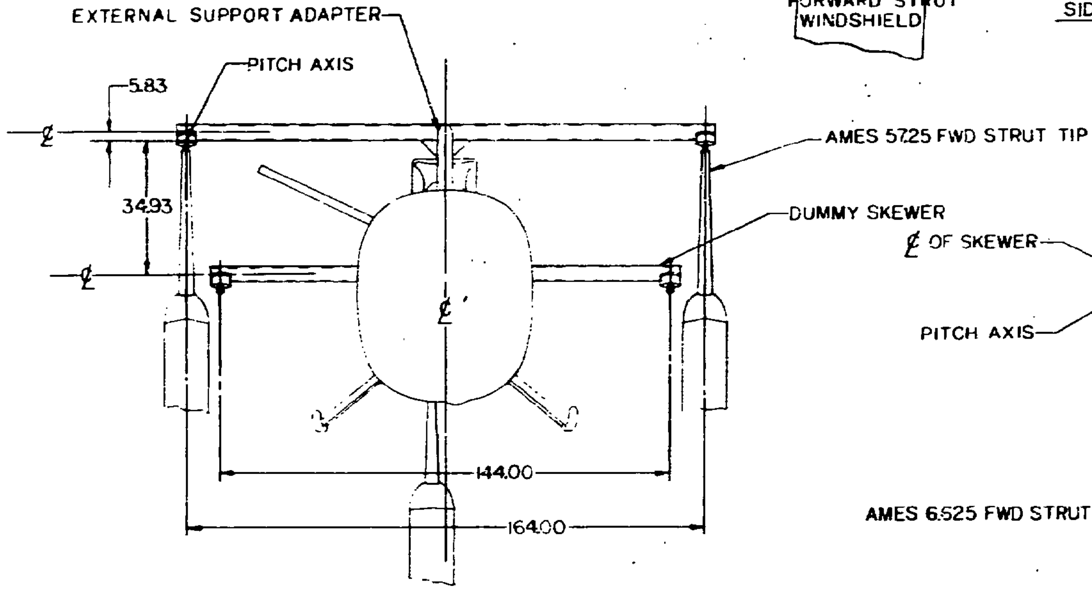


Figure 2. OH-6A Wind Tunnel Installation - Right-Front View



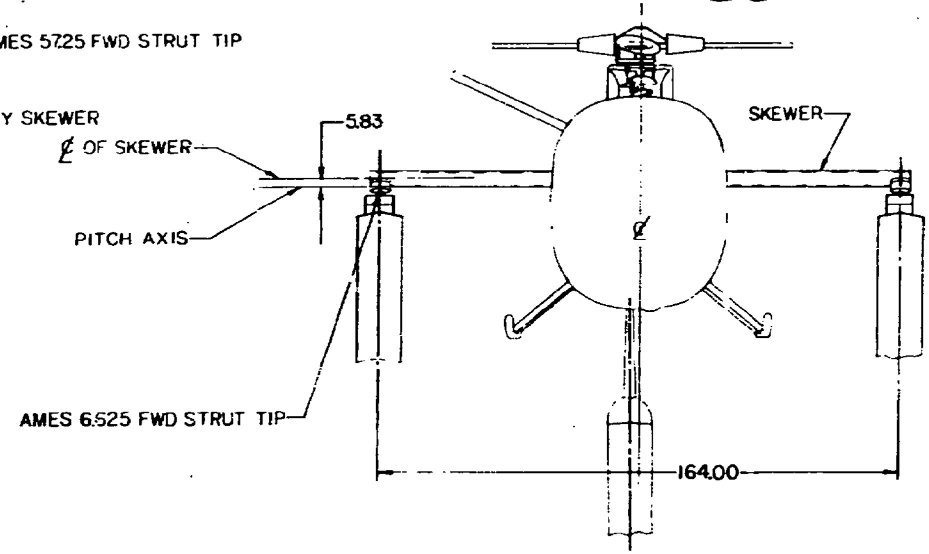
SIDE VIEW-TEST CONFIG.

FIG. 3A



FRONT VIEW-SUPPORT TARE CONFIG.

FIG. 3B



FRONT VIEW-TEST CONFIG.

FIG. 3C

41

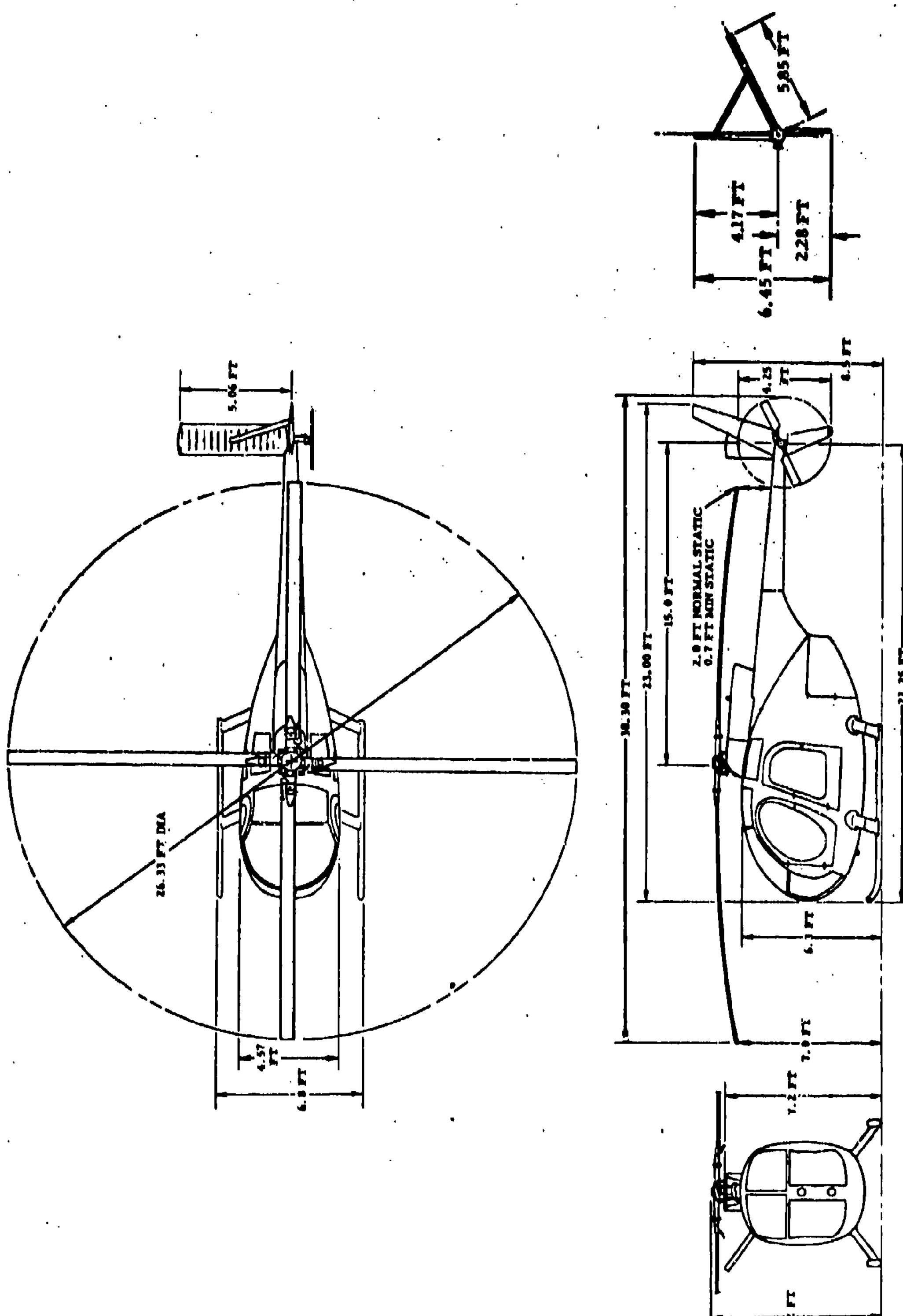
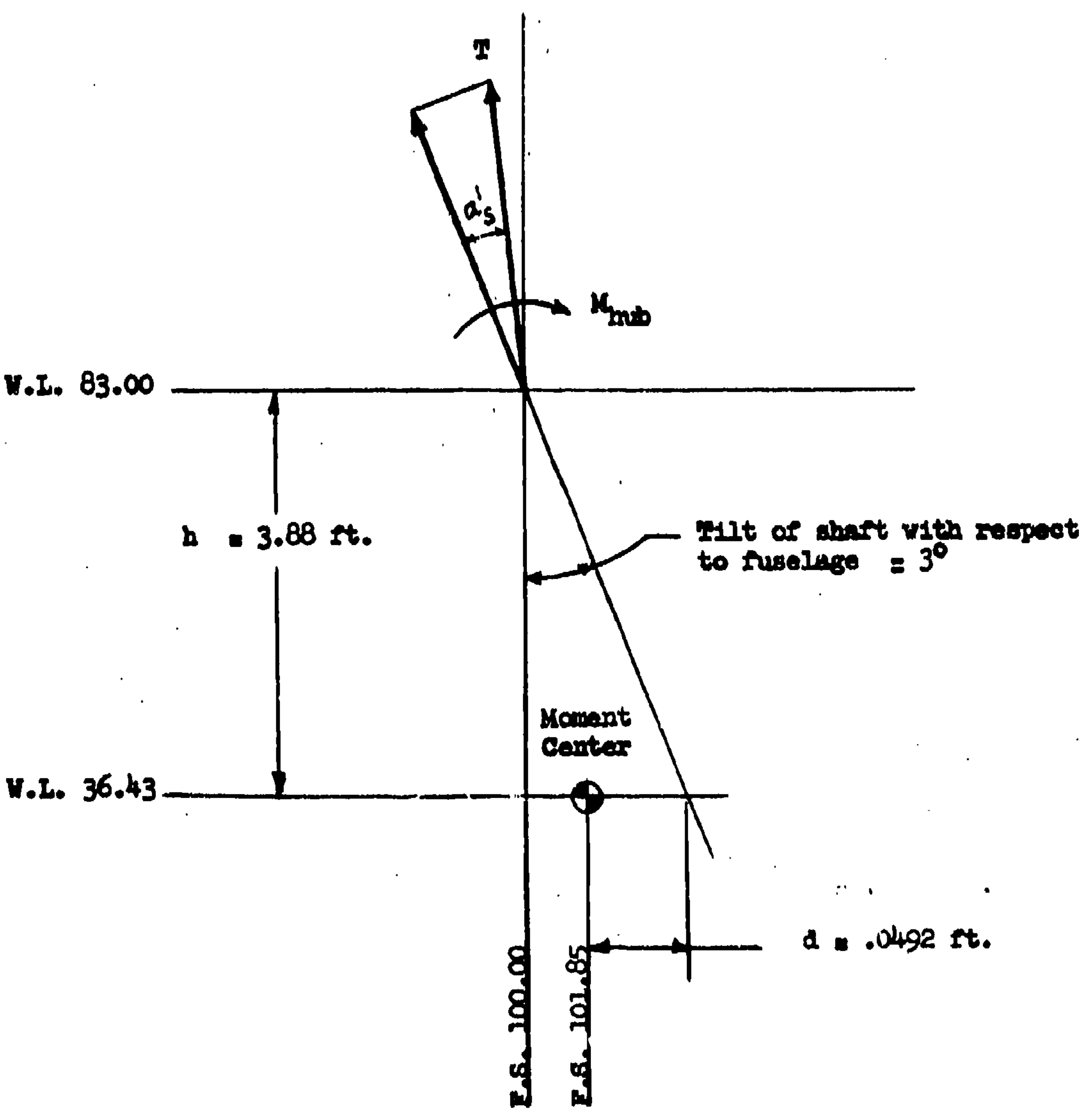


Figure 3D. Three-View Drawing

SCHEMATIC, SIDE VIEW



No Scale

Figure 4

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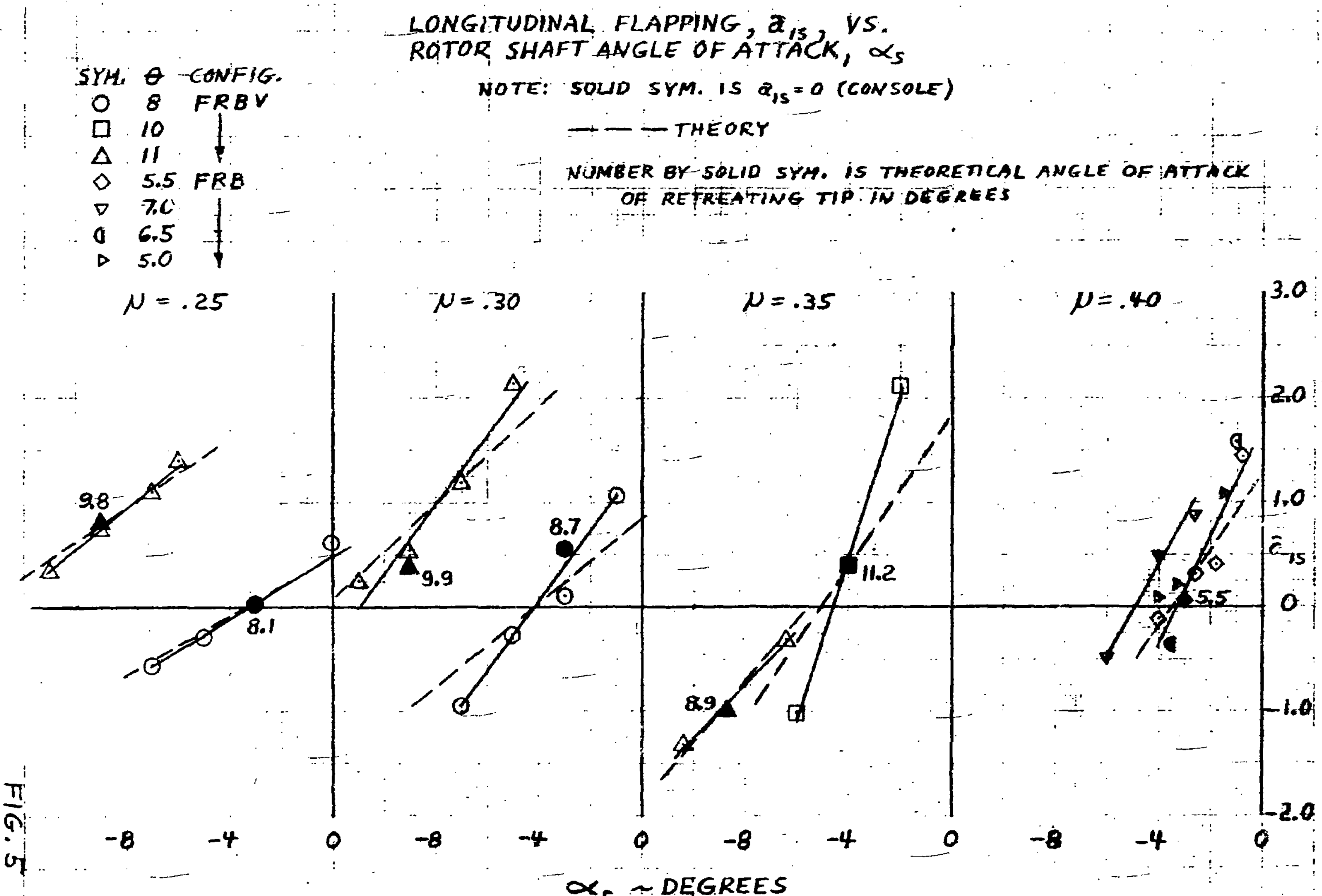

FIG. 5

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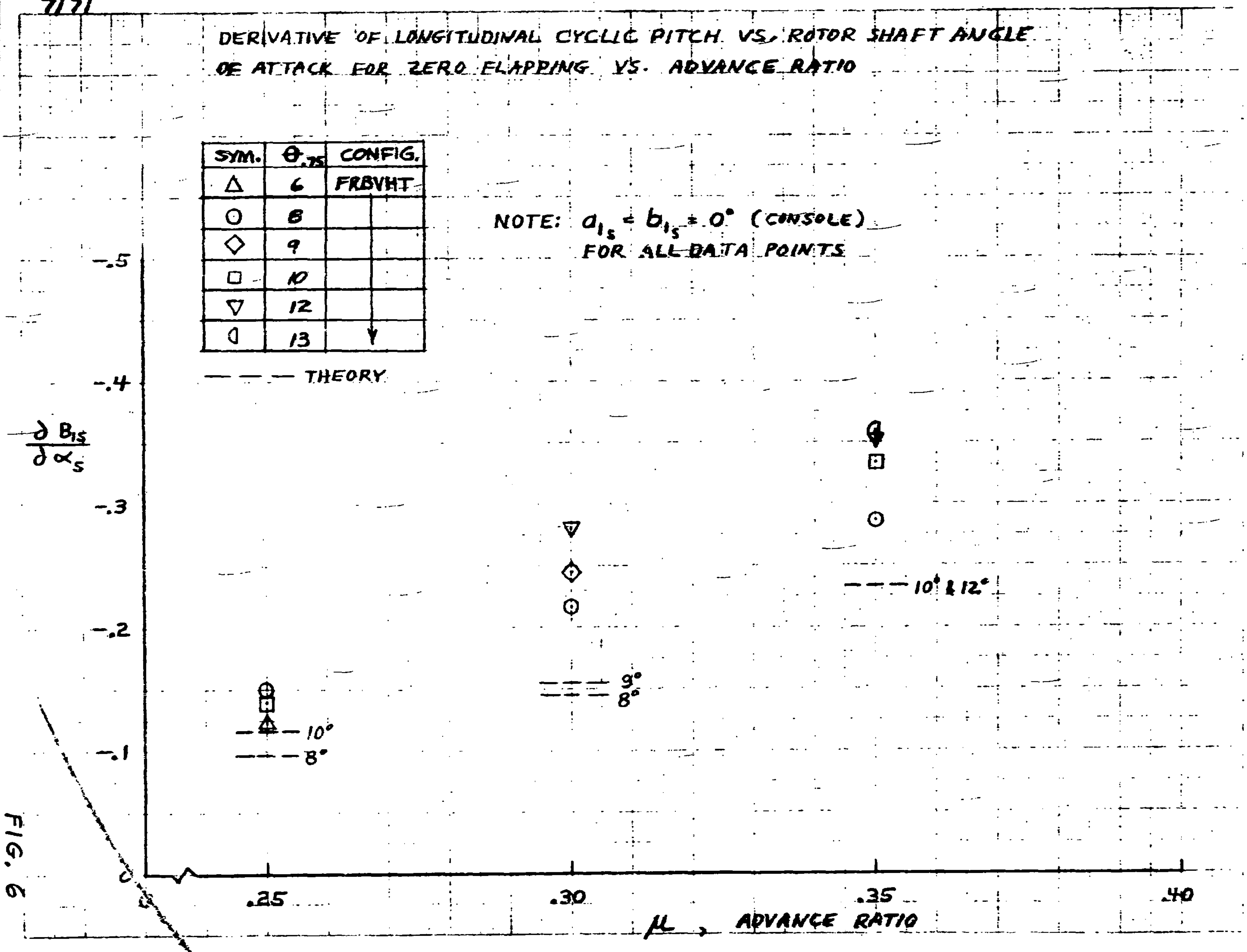

DERIVATIVE OF LONGITUDINAL CYCLIC PITCH VS. ROTOR SHAFT ANGLE OF ATTACK FOR ZERO FLAPPING VS. ADVANCE RATIO
SYM.
$\theta_{.75}$
CONFIG.
6
FRBVHT
8
9
10
12
13
THEORY
NOTE: $a_{1_s} = b_{1_s} = 0°$ (CONSOLE) FOR ALL DATA POINTS
$\frac{\partial B_{1s}}{\partial \alpha_s}$
-.5
-.4
-.3
-.2
-.1
0
10°
8°
9°
8°
10° & 12°
.25
.30
.35
.40
μ, ADVANCE RATIO

FIG. 6

RER 30/6/69

PITCHING MOMENT COEFFICIENT VS. ROTOR SHAFT ANGLE OF ATTACK

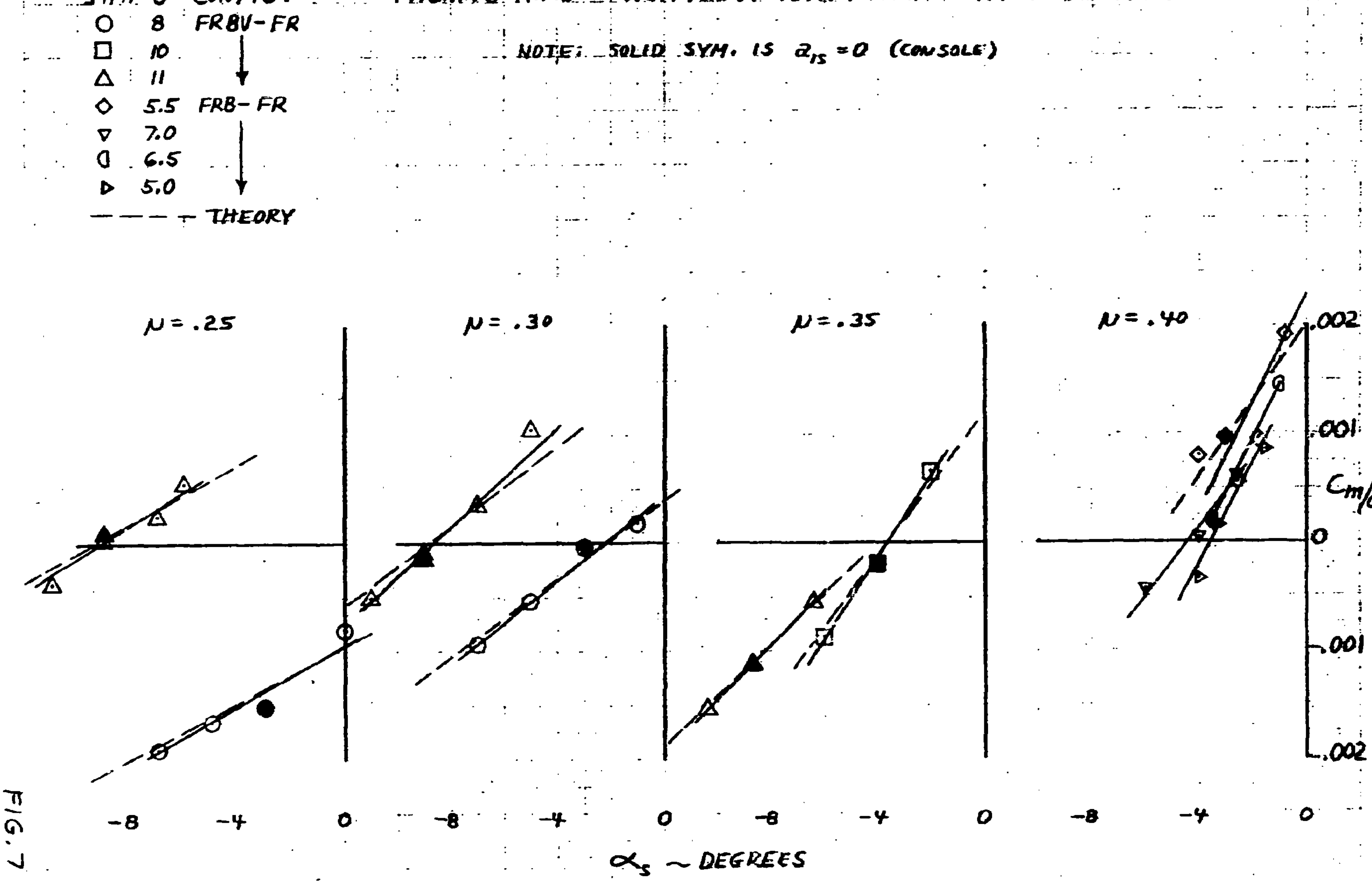

FIG. 7

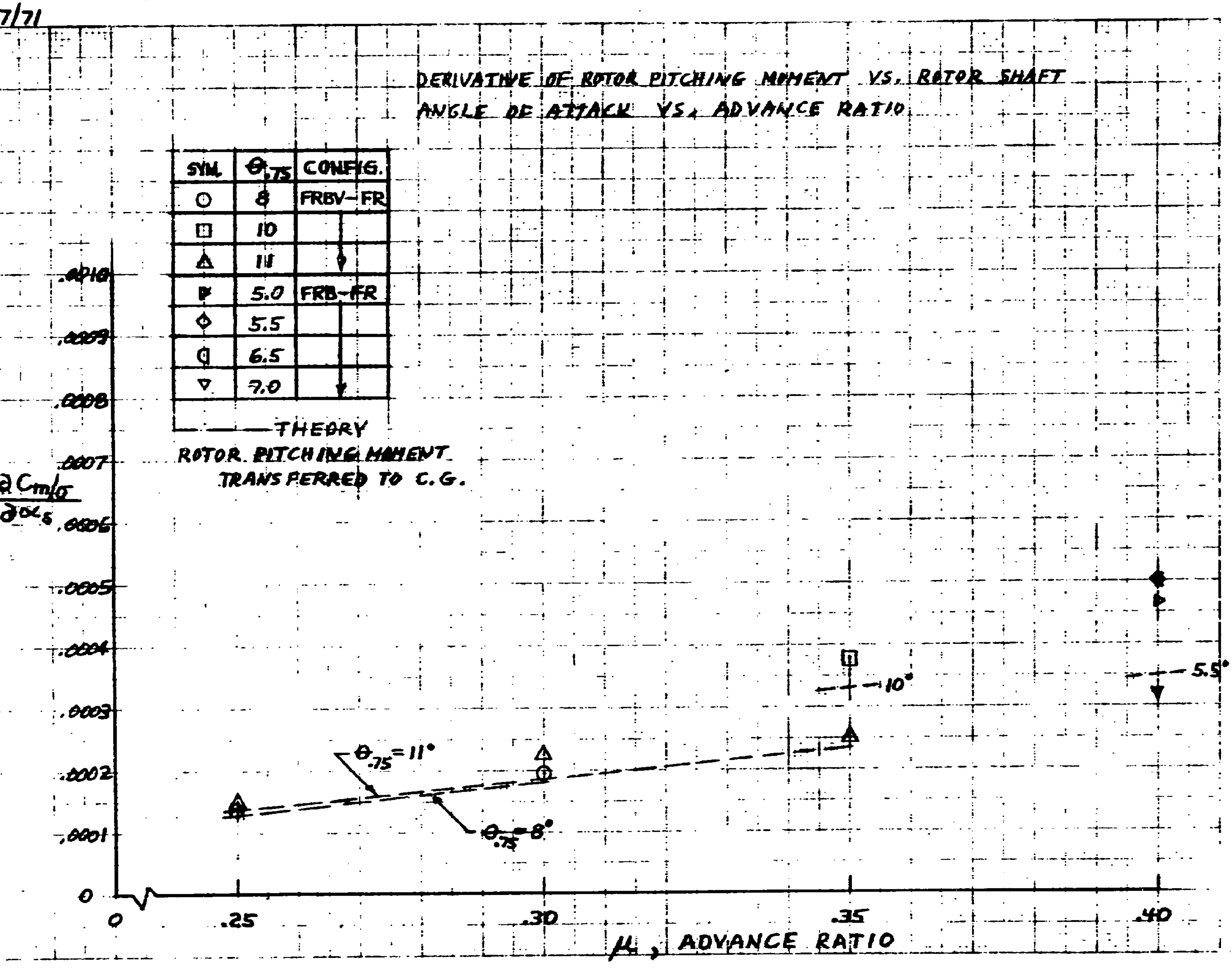
7/71
DERIVATIVE OF ROTOR PITCHING MOMENT VS. ROTOR SHAFT
ANGLE OF ATTACK VS. ADVANCE RATIO
SYM. | $\theta_{.75}$ | CONFIG.
8 | FRBV-FR
10
11
5.0 | FRB-FR
5.5
6.5
7.0
THEORY
ROTOR PITCHING MOMENT
TRANSFERRED TO C.G.
$\frac{\partial C_m/\sigma}{\partial \alpha_s}$
.0010
.0009
.0008
.0007
.0006
.0005
.0004
.0003
.0002
.0001
0
$\theta_{.75} = 11°$
$\theta_{.75} = 8°$
10°
5.5°
0
.25
.30
.35
.40
μ, ADVANCE RATIO

FIG. 8

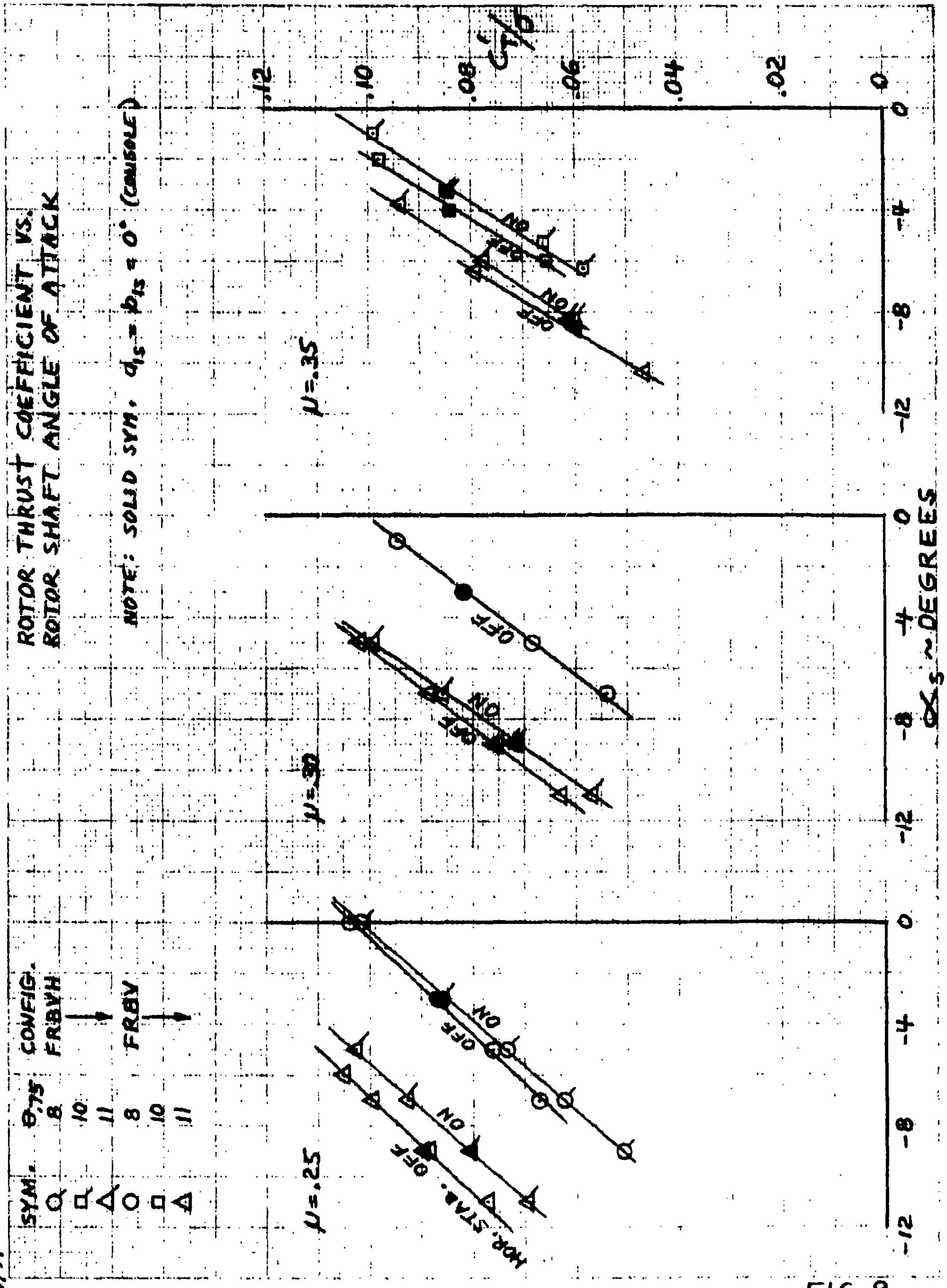
ROTOR THRUST COEFFICIENT VS.
ROTOR SHAFT ANGLE OF ATTACK
NOTE: SOLID SYM. $a_{1s} = b_{1s} = 0°$ (CONSOLE)
SYM. $\theta_{.75}$ CONFIG.
8 FRBVH
10
11
8 FRBV
10
11
$\mu = .25$
$\mu = .30$
$\mu = .35$
HOR. STAB. OFF
ON
OFF
C_T/σ
.12
.10
.08
.06
.04
.02
0
-12
-8
-4
0
α_s ~ DEGREES
7/71

FIG. 9

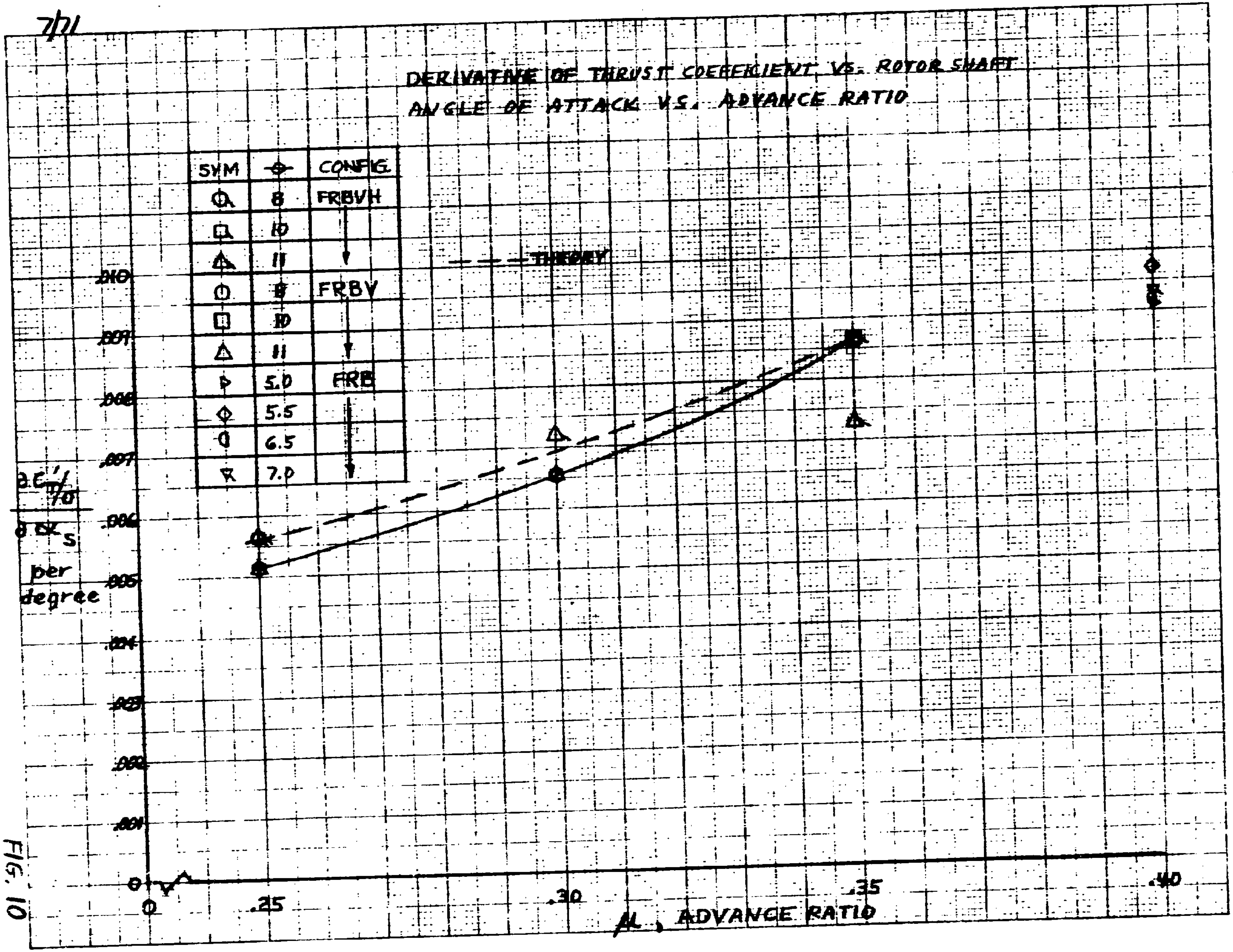
DERIVATIVE OF THRUST COEFFICIENT VS. ROTOR SHAFT
ANGLE OF ATTACK V.S. ADVANCE RATIO
SYM
CONFIG.
8
10
11
FRBVH
8
10
11
FRBV
5.0
5.5
6.5
7.0
FRB
— — — THEORY
$\frac{\partial C_T'/\sigma}{\partial \alpha_s}$ per degree
.010
.009
.008
.007
.006
.005
.004
.003
.002
.001
0
0
.25
.30
.35
.40
μ, ADVANCE RATIO
7/71

FIG. 10

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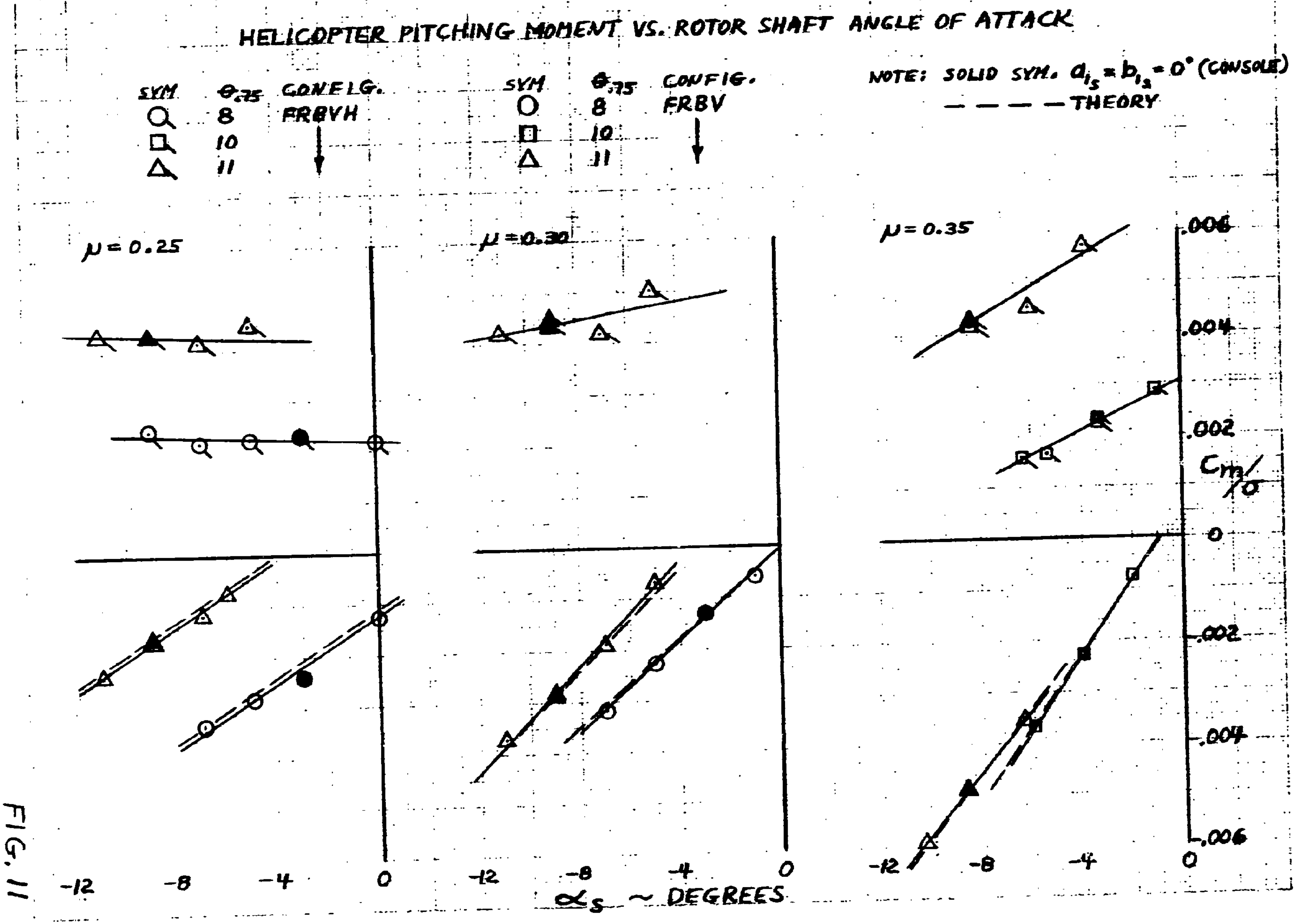
HELICOPTER PITCHING MOMENT VS. ROTOR SHAFT ANGLE OF ATTACK
SYM $\theta_{.75}$ CONFIG.
8 FRBVH
10
11
SYM $\theta_{.75}$ CONFIG.
8 FRBV
10
11
NOTE: SOLID SYM. $a_{1_s} = b_{1_s} = 0°$ (CONSOLE)
— — — — THEORY
$\mu = 0.25$
$\mu = 0.30$
$\mu = 0.35$
.006
.004
.002
C_m/σ
0
.002
.004
.006
-12
-8
-4
0
α_s ~ DEGREES

FIG. 11

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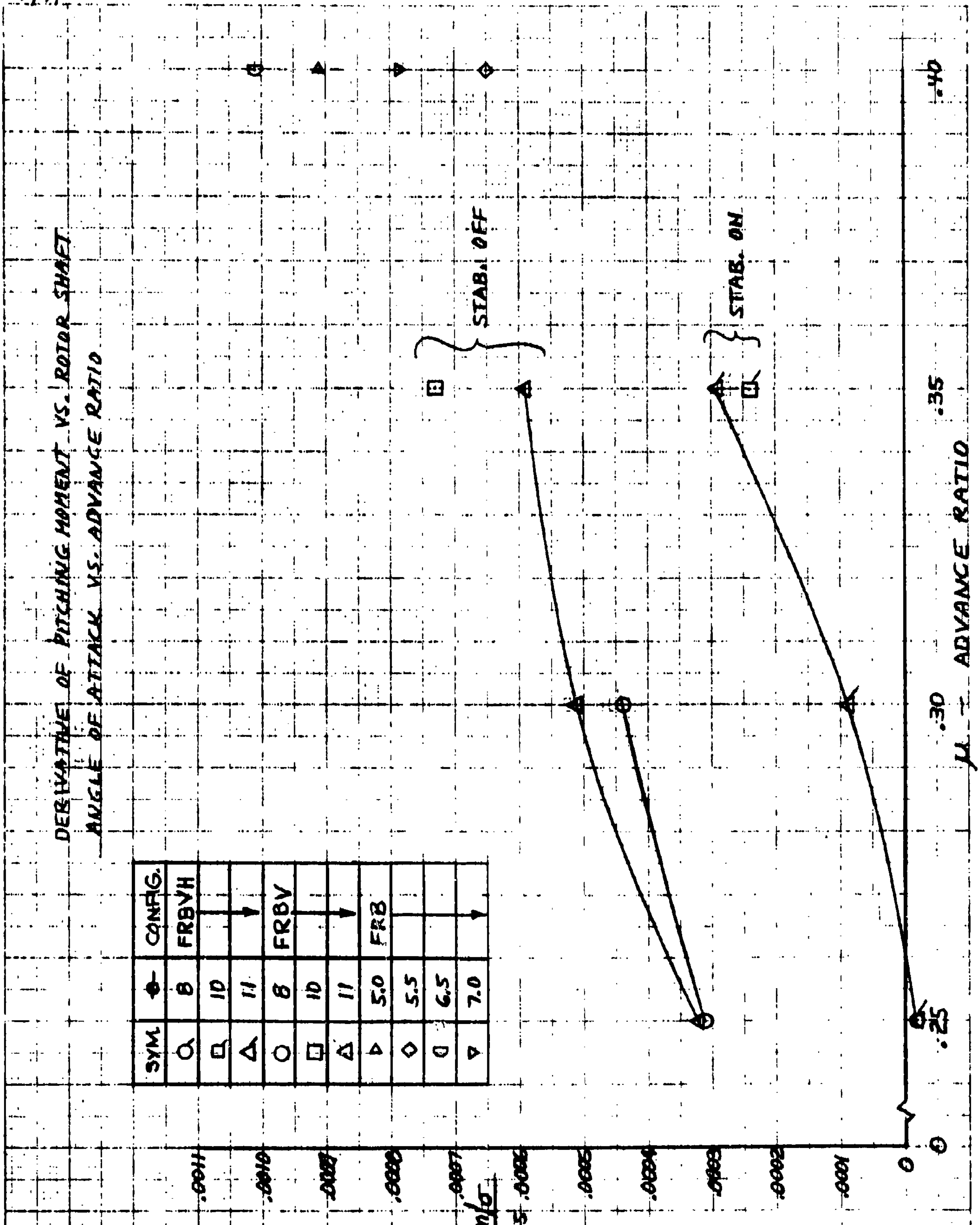

DERIVATIVE OF PITCHING MOMENT VS. ROTOR SHAFT
ANGLE OF ATTACK VS. ADVANCE RATIO
SYM.
CONFIG.
FRBVH
FRBV
FRB
8
10
11
8
10
11
5.0
5.5
6.5
7.0
STAB. OFF
STAB. ON
$\frac{\partial C_m/\sigma}{\partial \alpha_s}$
.0011
.0010
.0009
.0008
.0007
.0006
.0005
.0004
.0003
.0002
.0001
0
0
.25
.30
.35
.40
μ — ADVANCE RATIO

FIG. 12

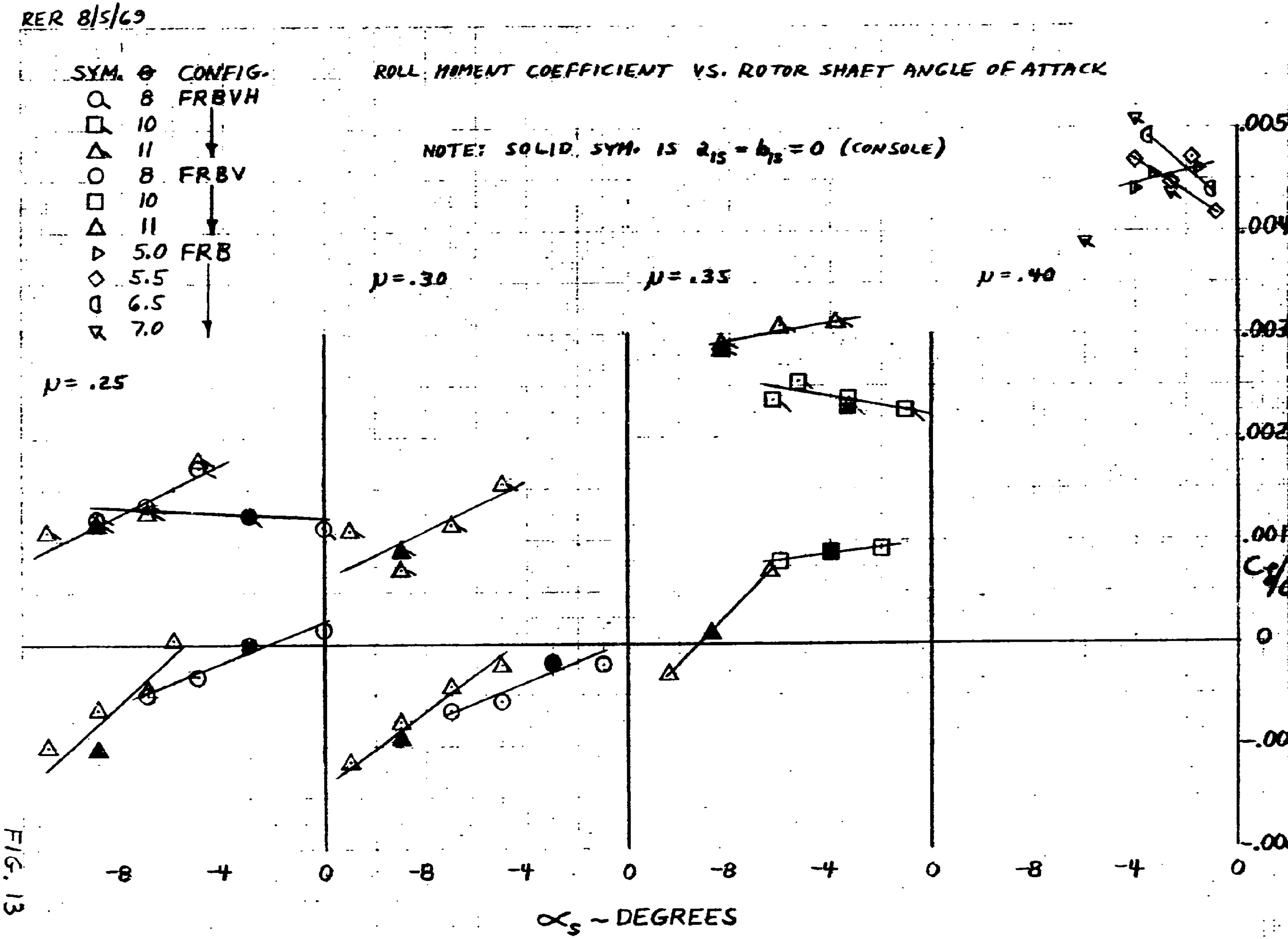
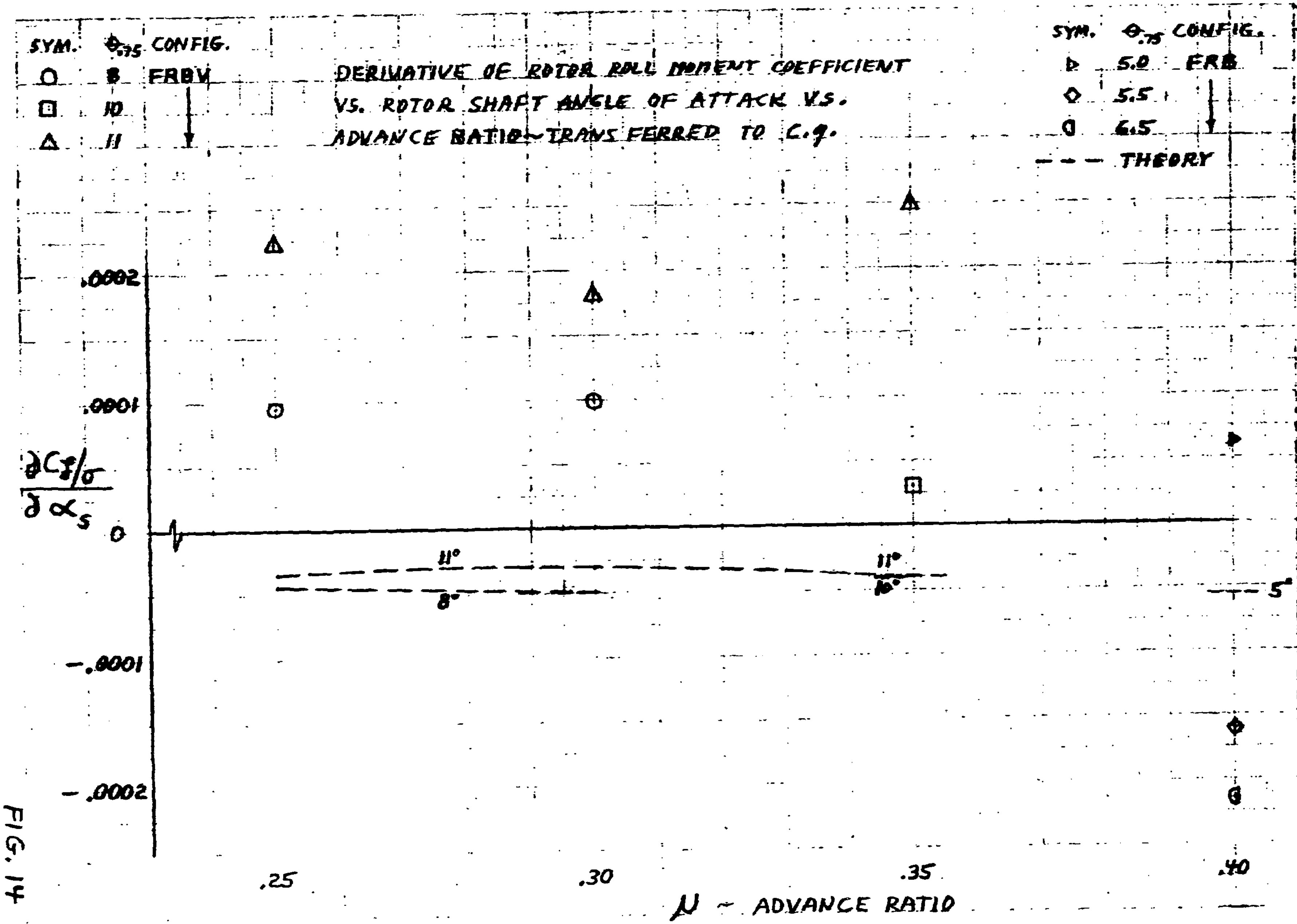

RER 8/5/69
ROLL MOMENT COEFFICIENT VS. ROTOR SHAFT ANGLE OF ATTACK
NOTE: SOLID SYM. IS $a_{1S} = b_{1S} = 0$ (CONSOLE)
SYM. θ CONFIG.
8 FRBVH
10
11
8 FRBV
10
11
5.0 FRB
5.5
6.5
7.0
μ = .25
μ = .30
μ = .35
μ = .40
.005
.004
.003
.002
.001
C_l/σ
0
-.001
-.002
-8
-4
0
α_s ~ DEGREES

FIG. 13



DERIVATIVE OF ROTOR ROLL MOMENT COEFFICIENT
VS. ROTOR SHAFT ANGLE OF ATTACK VS.
ADVANCE RATIO - TRANSFERRED TO C.G.
SYM. $\theta_{.75}$ CONFIG.
8 FRBV
10
11
SYM. $\theta_{.75}$ CONFIG.
5.0 FRB
5.5
6.5
THEORY
.0002
.0001
0
-.0001
-.0002
$\frac{\partial C_l/\sigma}{\partial \alpha_s}$
11°
8°
11°
10°
5°
.25
.30
.35
.40
μ ~ ADVANCE RATIO

FIG. 14

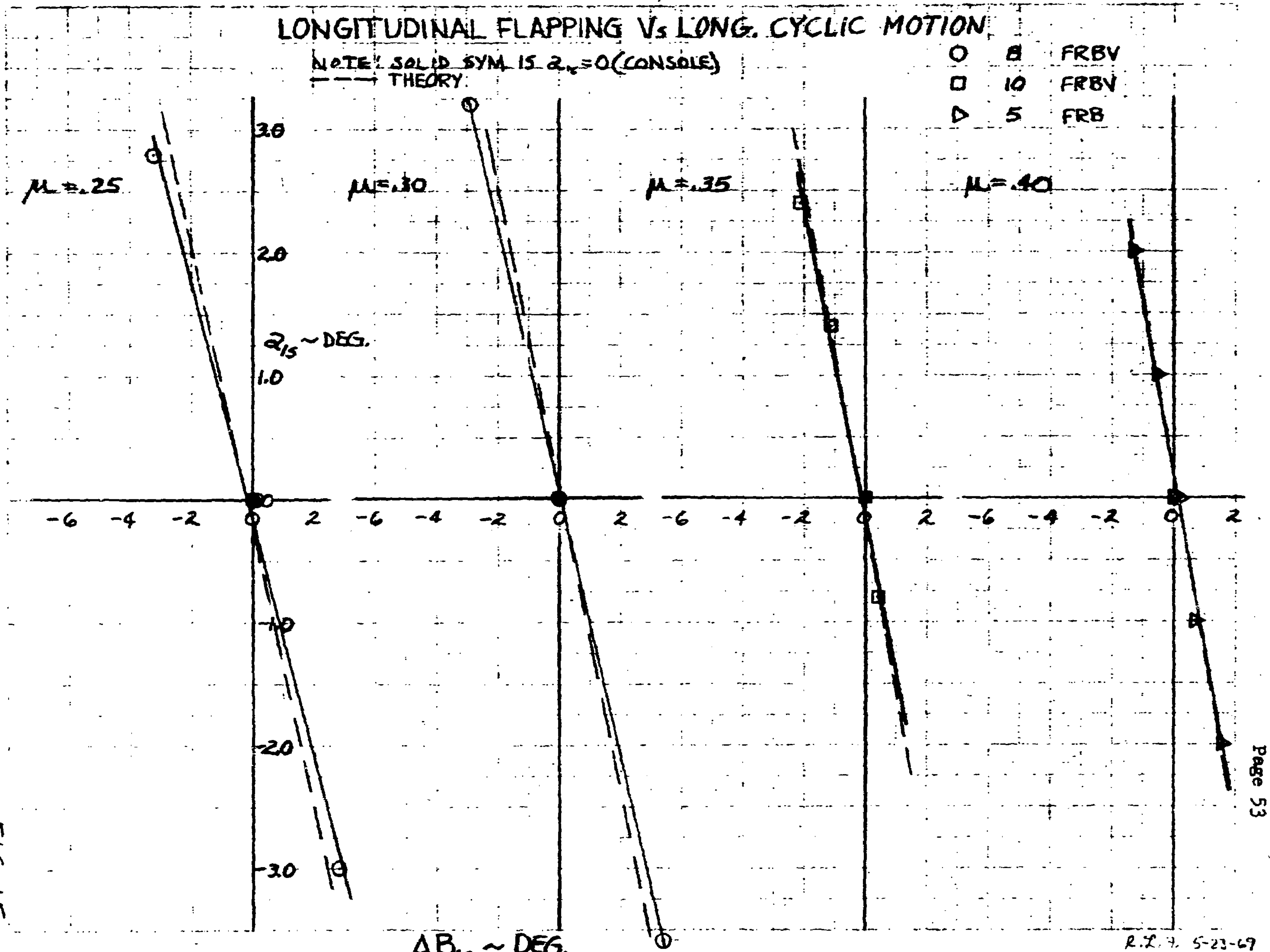

LONGITUDINAL FLAPPING Vs LONG. CYCLIC MOTION
NOTE: SOLID SYM. IS $a_{1c}=0$ (CONSOLE)
THEORY
○ 8 FRBV
□ 10 FRBV
▷ 5 FRB
μ=.25
μ=.30
μ=.35
μ=.40
3.0
2.0
a_{1s} ~ DEG.
1.0
-1.0
-2.0
-3.0
-6
-4
-2
0
2
ΔB_{1s} ~ DEG.
5-23-69

FIG. 15

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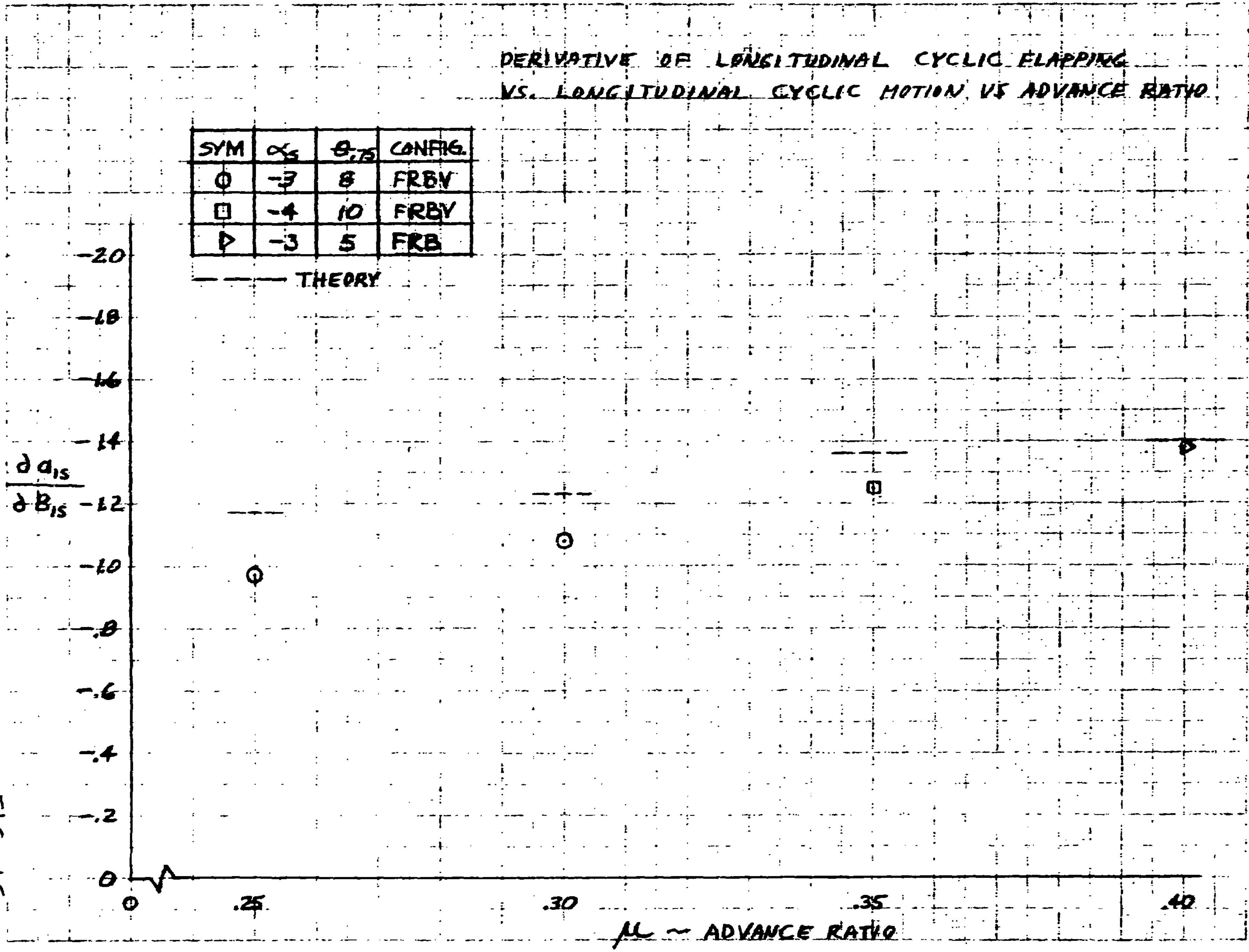
DERIVATIVE OF LONGITUDINAL CYCLIC FLAPPING
VS. LONGITUDINAL CYCLIC MOTION VS ADVANCE RATIO
SYM | α_s | $\theta_{.75}$ | CONFIG.
-3 | 8 | FRBV
-4 | 10 | FRBV
-3 | 5 | FRB
THEORY
$\frac{\partial a_{1s}}{\partial B_{1s}}$
-2.0
-1.8
-1.6
-1.4
-1.2
-1.0
-.8
-.6
-.4
-.2
0
0
.25
.30
.35
.40
μ ~ ADVANCE RATIO

FIG. 16

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DERIVATIVE OF ROTOR PITCHING MOMENT VS. LONGITUDINAL CYCLIC STICK VS. ADVANCE RATIO TRANSFERRED TO C.G.

SYM.	$\theta_{.75}$	CONFIG.
○	8	FRBV
□	10	FRBV
△	5	FRB

NOTE: SOLID SYM. IS $a_{1s} = 0$ (CONSOLE)

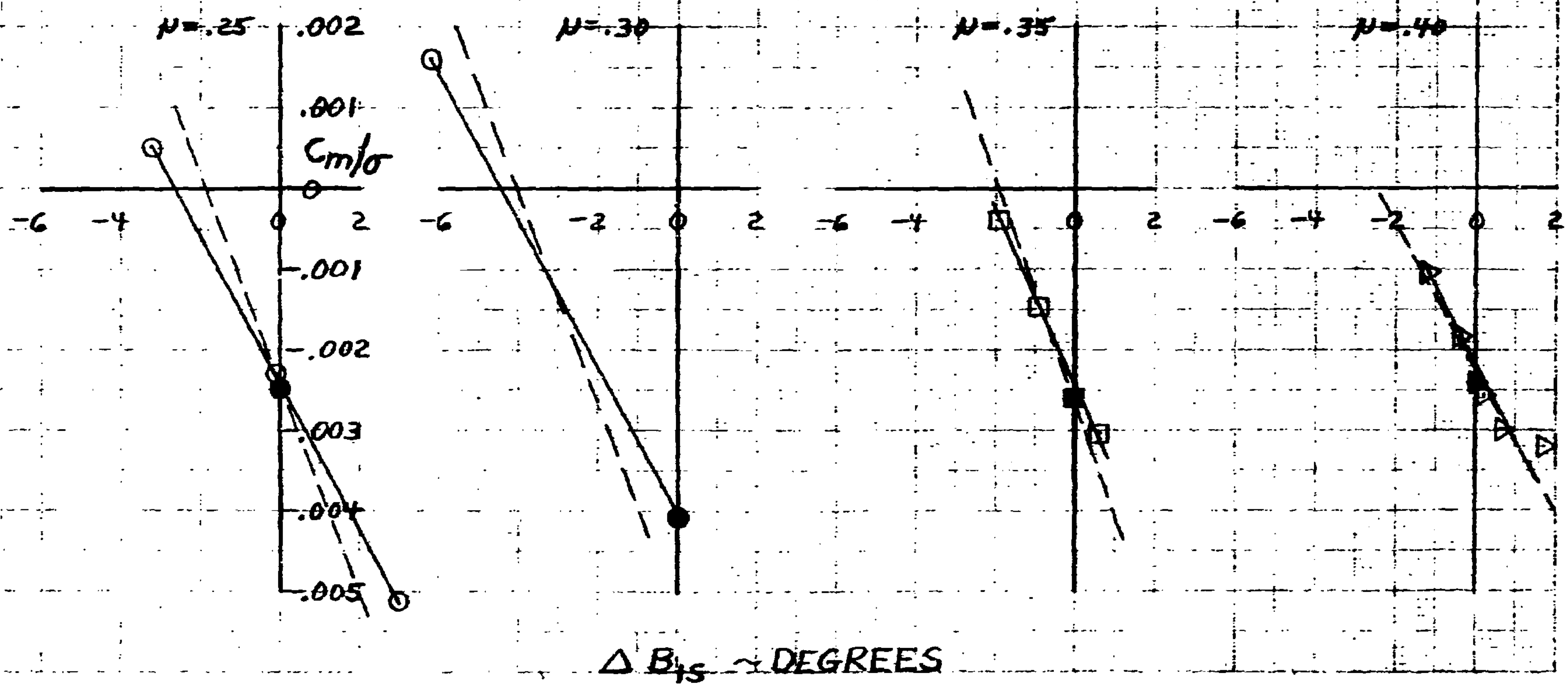

FIG. 17

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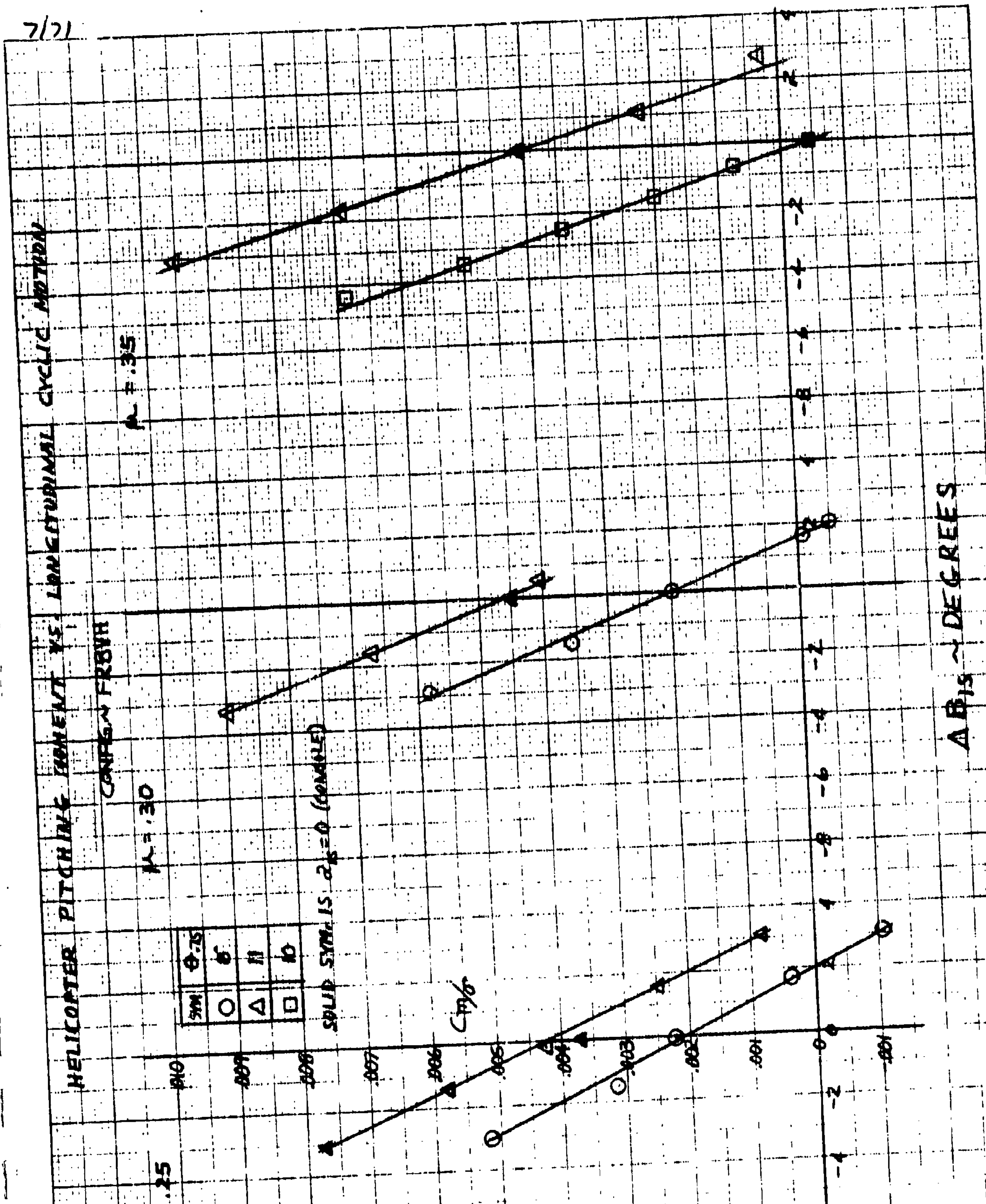
HELICOPTER PITCHING MOMENT VS. LONGITUDINAL CYCLIC MOTION
CONFIG. N FRBVH
μ = .25
μ = .30
μ = .35
SYM | $\theta_{.75}$
○ | 6°
△ | 11
□ | 16
SOLID SYM. IS a_{1s} = 0 (CONTROLLED)
C_m/σ
.010
.009
.008
.007
.006
.005
.004
.003
.002
.001
0
.001
ΔB_{1s} ~ DEGREES

FIG. 18

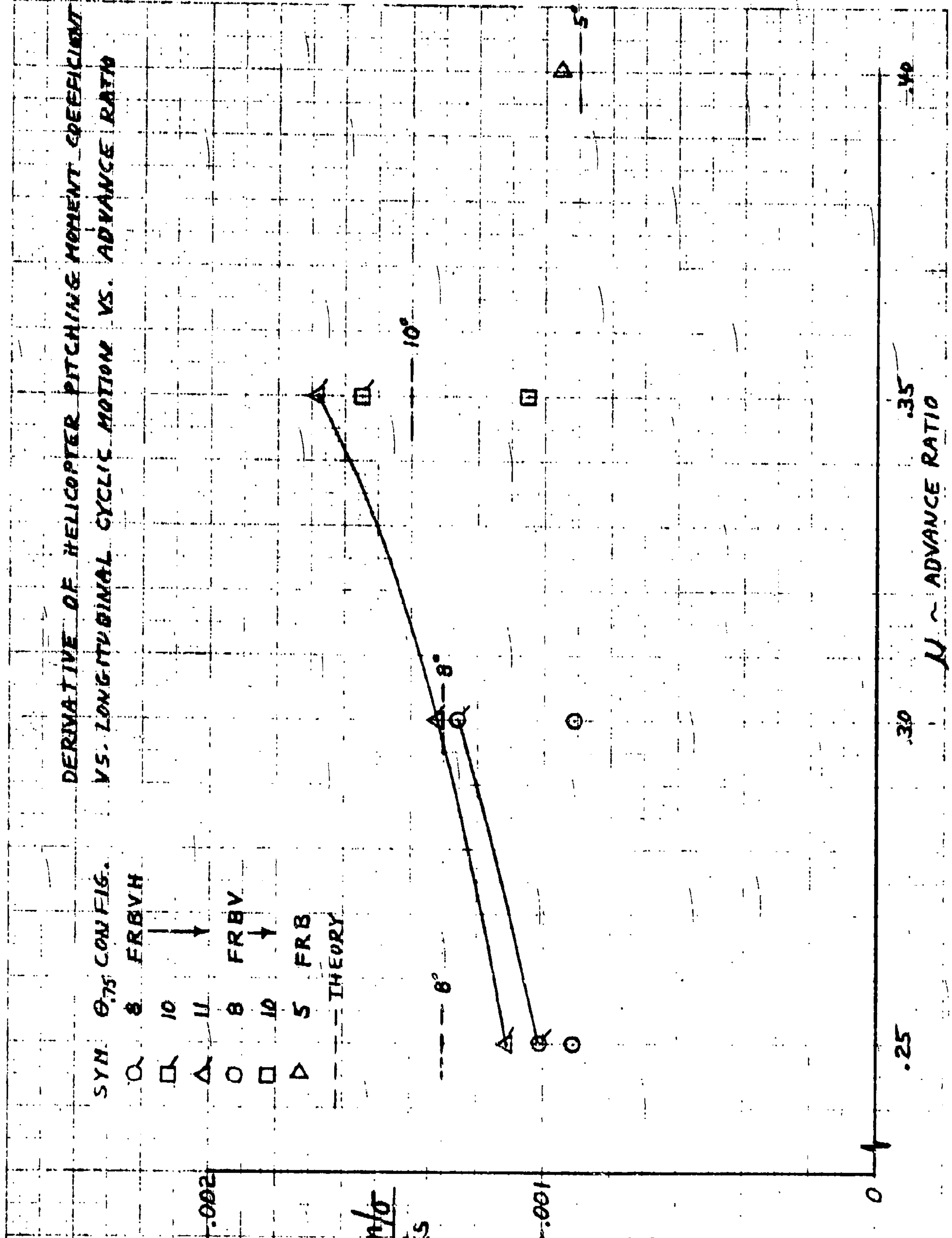
DERIVATIVE OF HELICOPTER PITCHING MOMENT COEFFICIENT
VS. LONGITUDINAL CYCLIC MOTION VS. ADVANCE RATIO
SYM. $\theta_{.75}$ CONFIG.
8 ERBVH
10
11
8 FRBV
10
5 FRB
THEORY
8°
8°
10°
5°
.002
.001
0
.25
.30
.35
.40
μ ~ ADVANCE RATIO
$\frac{\partial C_m/\sigma}{\partial B_{1S}}$

FIG. 19

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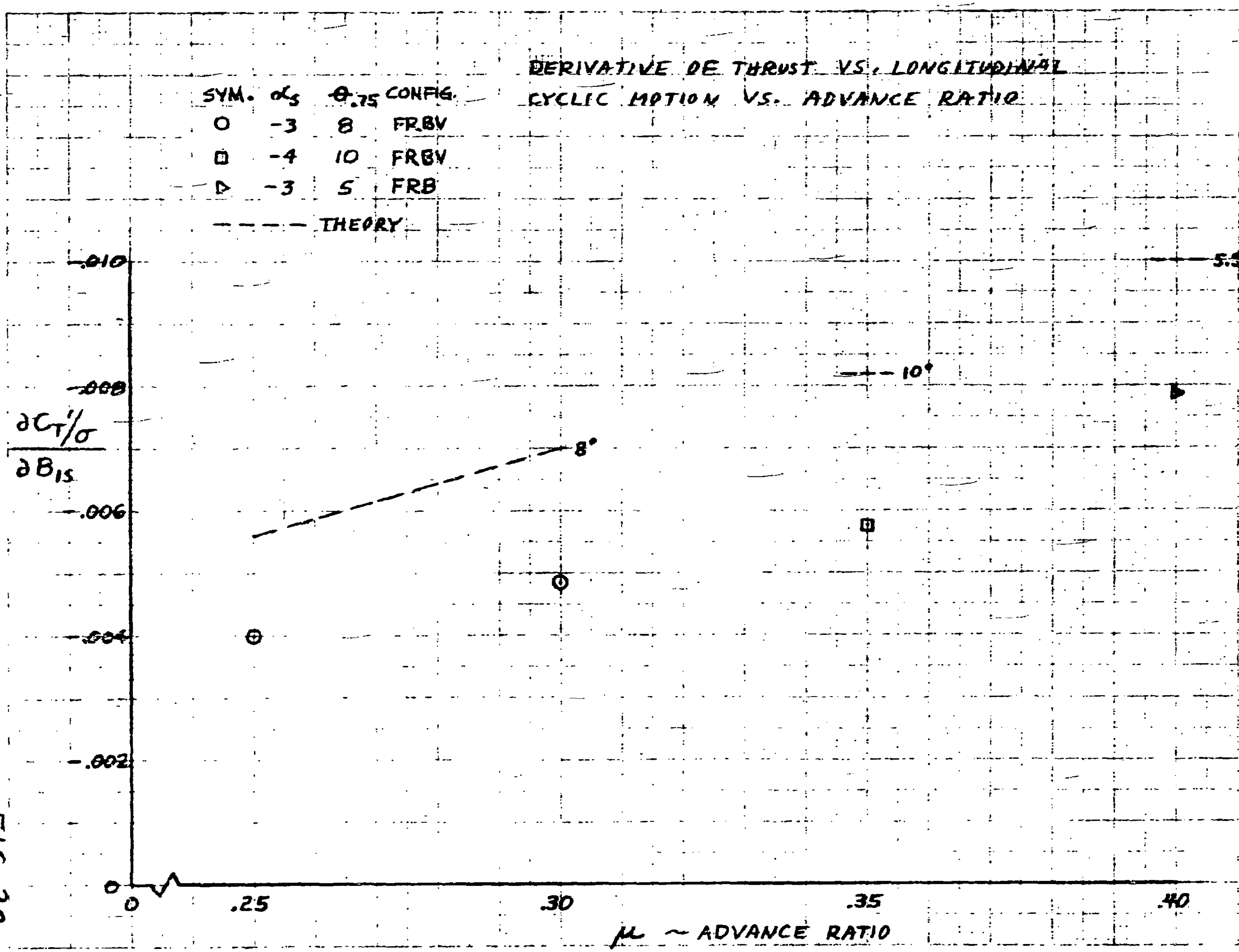
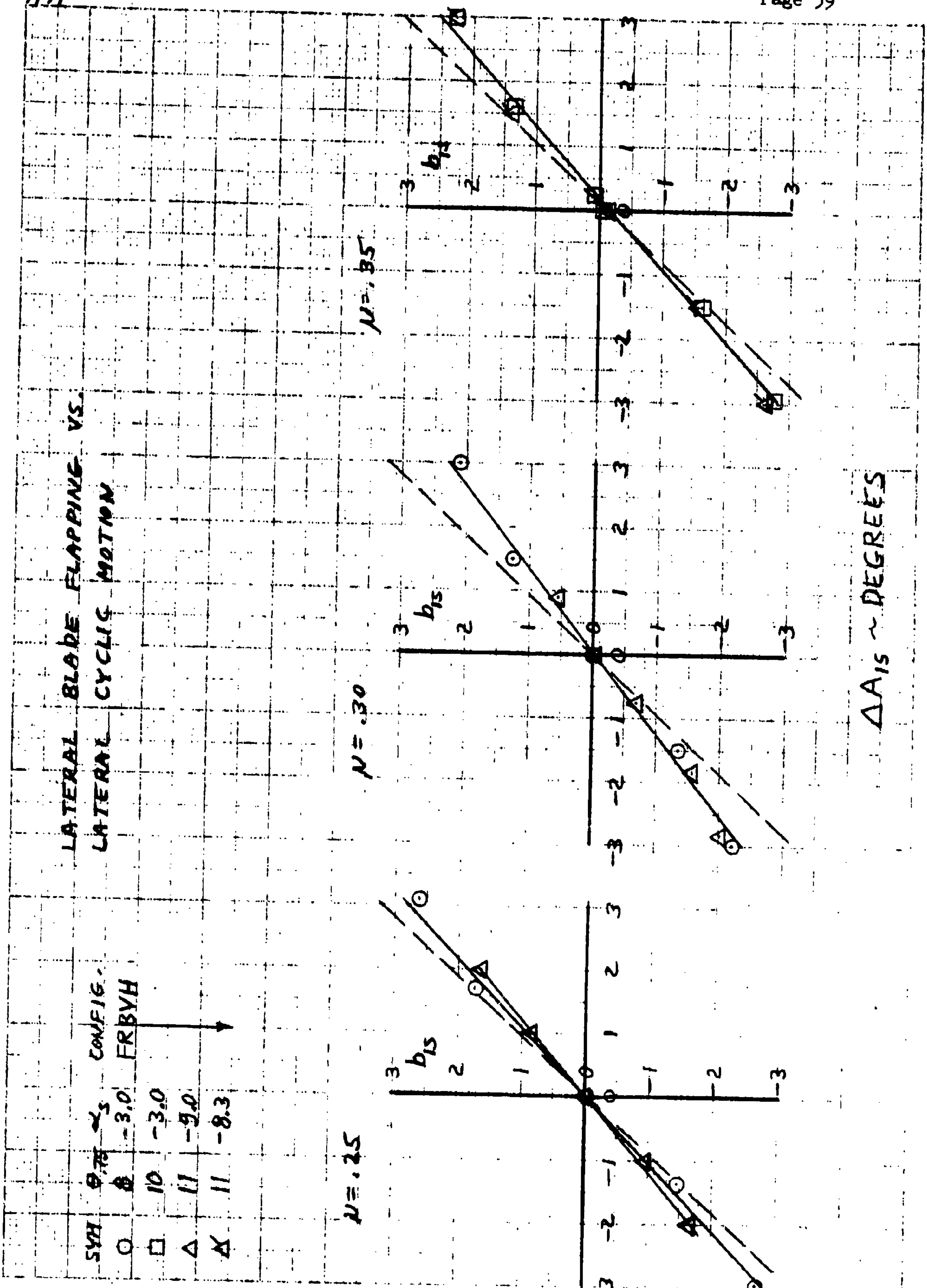

DERIVATIVE OF THRUST VS. LONGITUDINAL
CYCLIC MOTION VS. ADVANCE RATIO
SYM. α_S $\theta_{.75}$ CONFIG.
O -3 8 FRBV
□ -4 10 FRBV
▷ -3 5 FRB
THEORY
$\frac{\partial C_T'/\sigma}{\partial B_{1S}}$
.010
.008
.006
.004
.002
0
0
.25
.30
.35
.40
5.5°
10°
8°
μ ~ ADVANCE RATIO

FIG. 20



LATERAL BLADE FLAPPING VS.
LATERAL CYCLIC MOTION
SYM θ.75 α_s CONFIG.
FRBVH
○ 8 -3.0
□ 10 -3.0
△ 11 -9.0
11 -8.3
μ = .25
μ = .30
μ = .35
b1s
ΔA1s ~ DEGREES

FIG. 21

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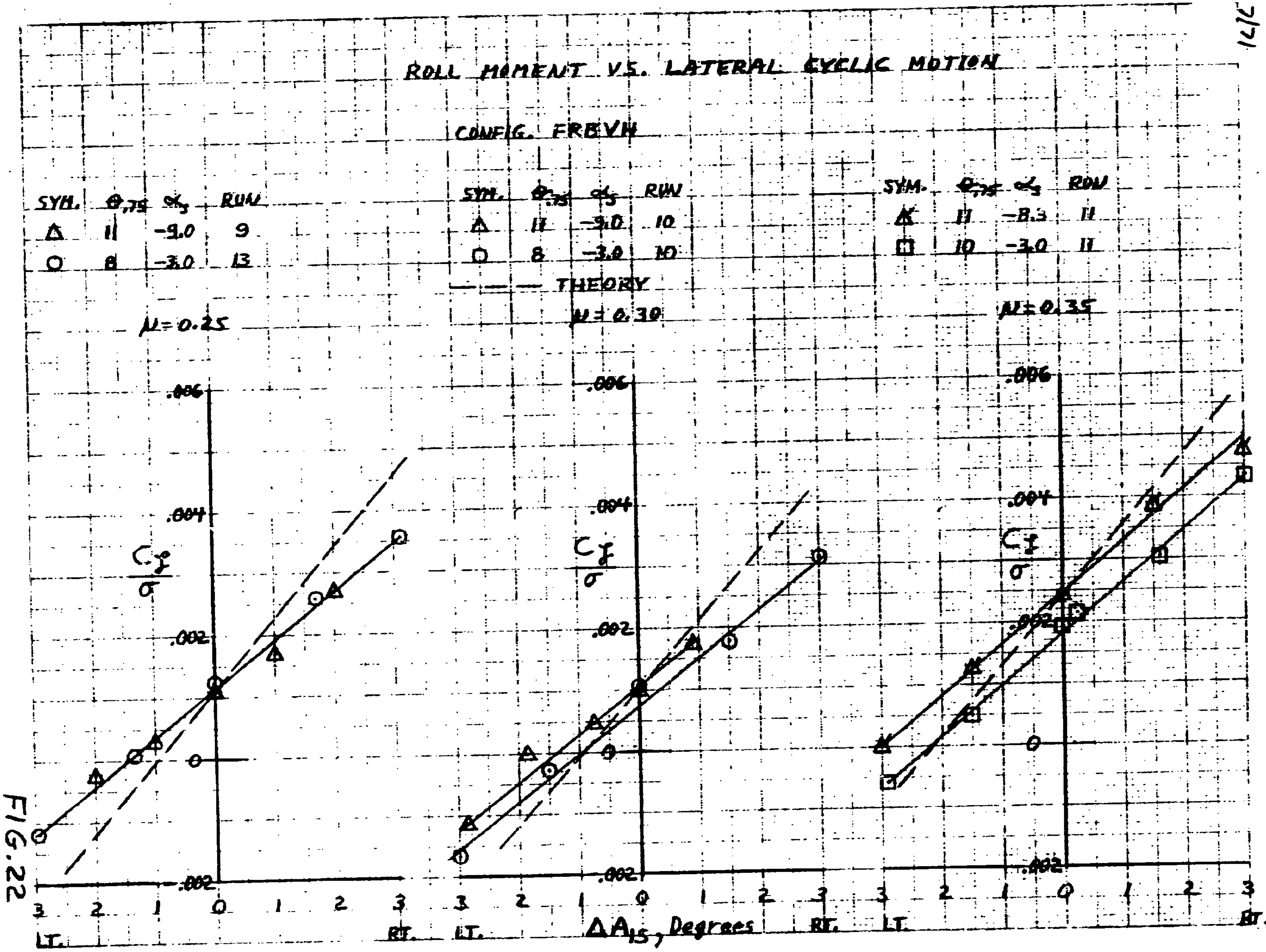
ROLL MOMENT VS. LATERAL CYCLIC MOTION
CONFIG. FREVH
SYM. θ.75 αs RUN
Δ 11 -9.0 9
O 8 -3.0 13
μ=0.25
SYM. θ.75 αs RUN
Δ 11 -9.0 10
O 8 -3.0 10
THEORY
μ=0.30
SYM. θ.75 αs RUN
Δ 11 -8.3 11
□ 10 -3.0 11
μ=0.35
Cℓ/σ
.006
.004
.002
0
-.002
3 2 1 0 1 2 3
LT. RT.
ΔA1S, Degrees

FIG.22

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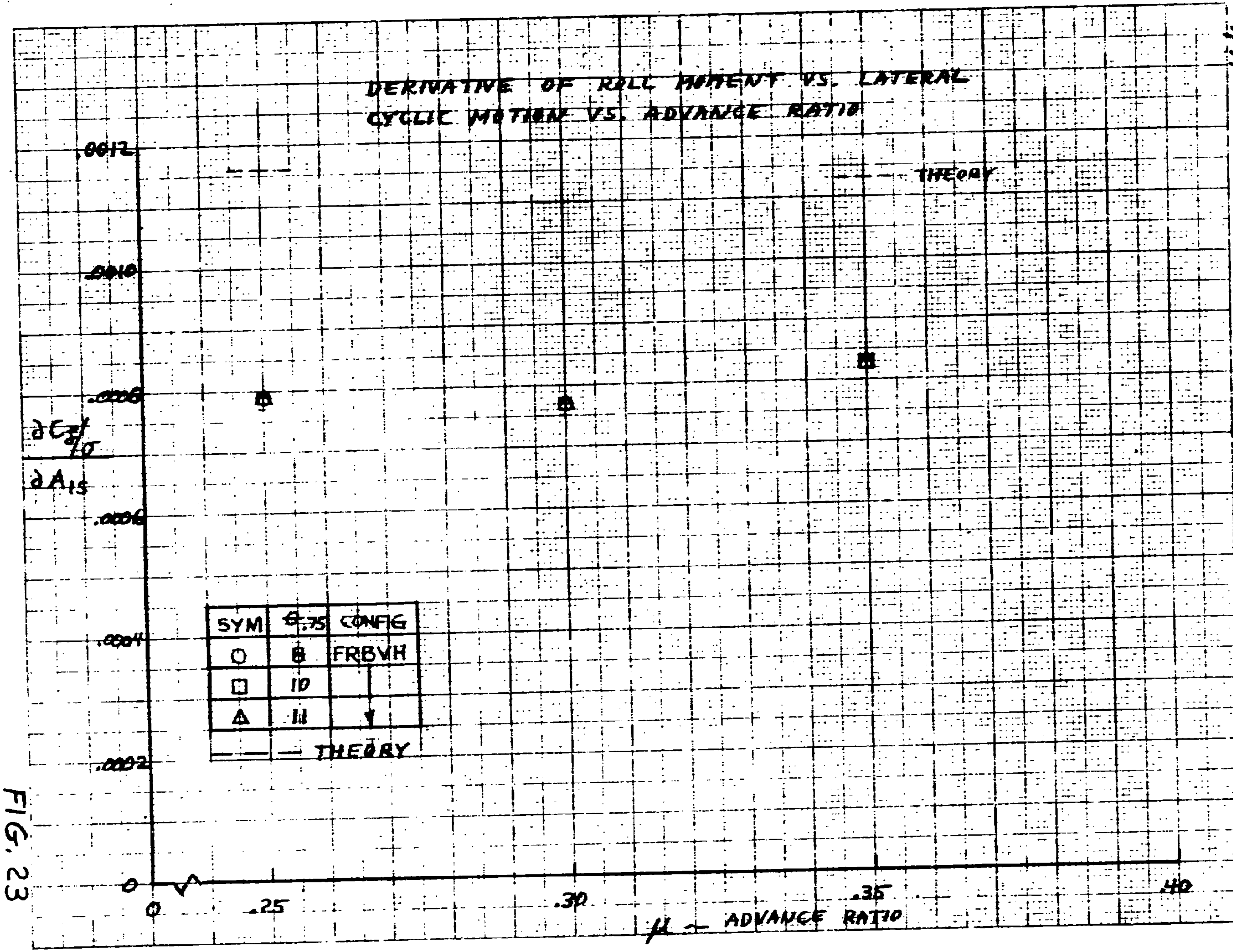
DERIVATIVE OF ROLL MOMENT VS. LATERAL
CYCLIC MOTION VS. ADVANCE RATIO
THEORY
.0012
.0010
.0008
.0006
.0004
.0002
0
∂C/σ / ∂A1S
SYM | θ.75 | CONFIG
○ | 8 | FRBVH
□ | 10 |
△ | 11 |
THEORY
0
.25
.30
.35
.40
μ — ADVANCE RATIO

FIG. 23

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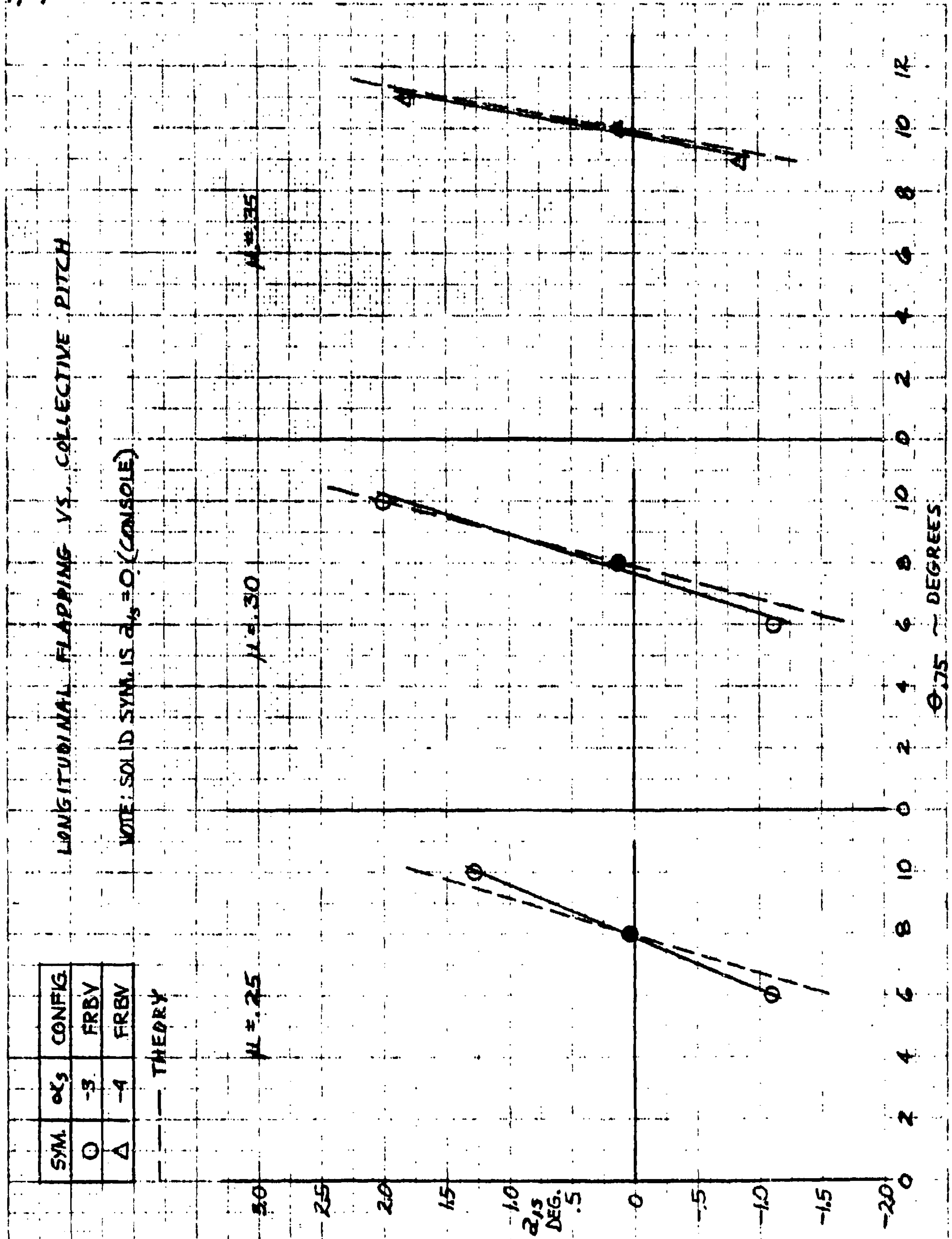
LONGITUDINAL FLAPPING VS. COLLECTIVE PITCH
NOTE: SOLID SYM. IS a_{1s} = 0 (CONSOLE)
SYM. | α_S | CONFIG
O | -3 | FRBV
Δ | -4 | FRBV
— THEORY
μ = .25
μ = .30
μ = .35
a_{1s} DEG.
3.0
2.5
2.0
1.5
1.0
.5
0
-.5
-1.0
-1.5
-2.0
0
2
4
6
8
10
12
$\theta_{.75}$ ~ DEGREES

FIG. 24

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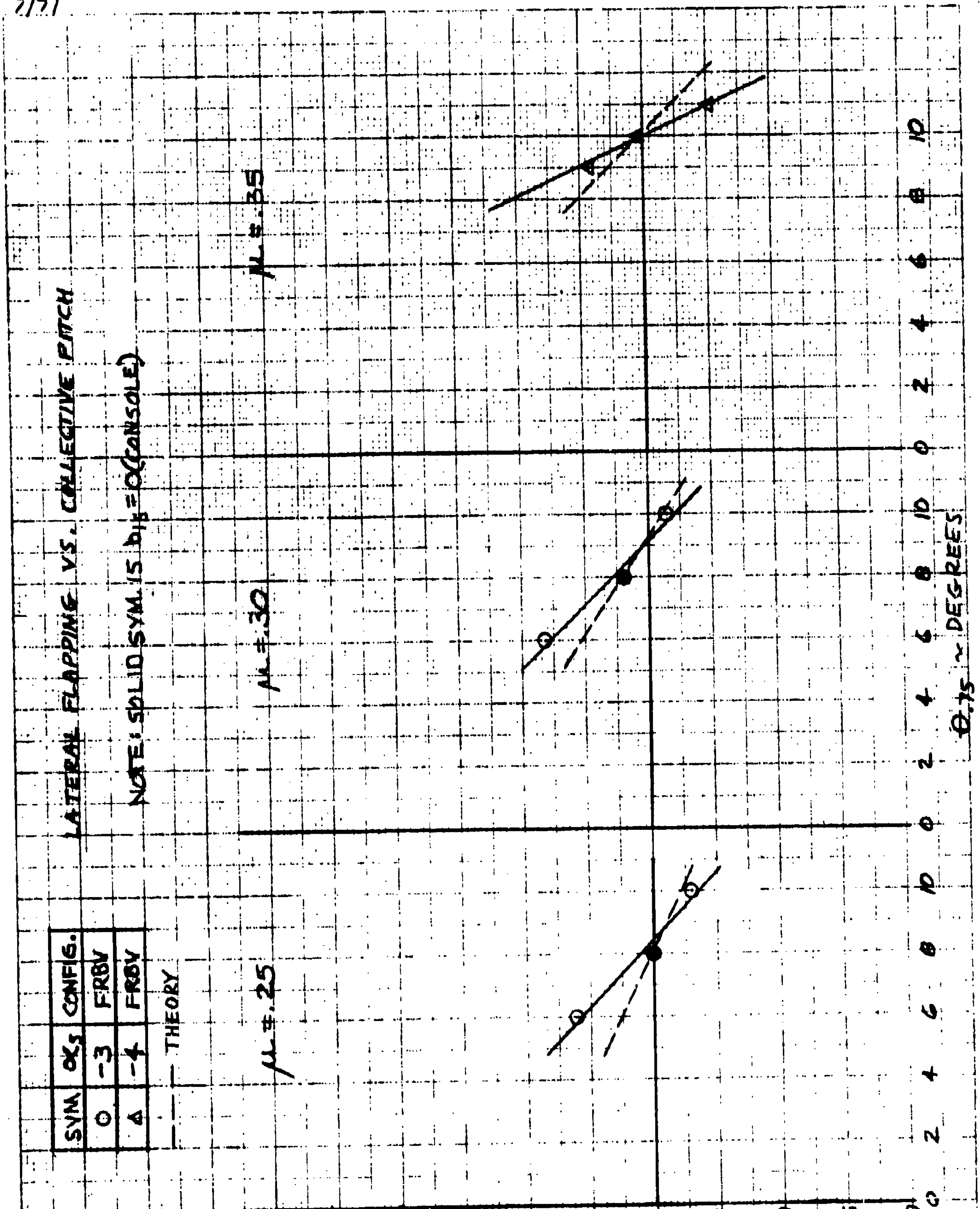
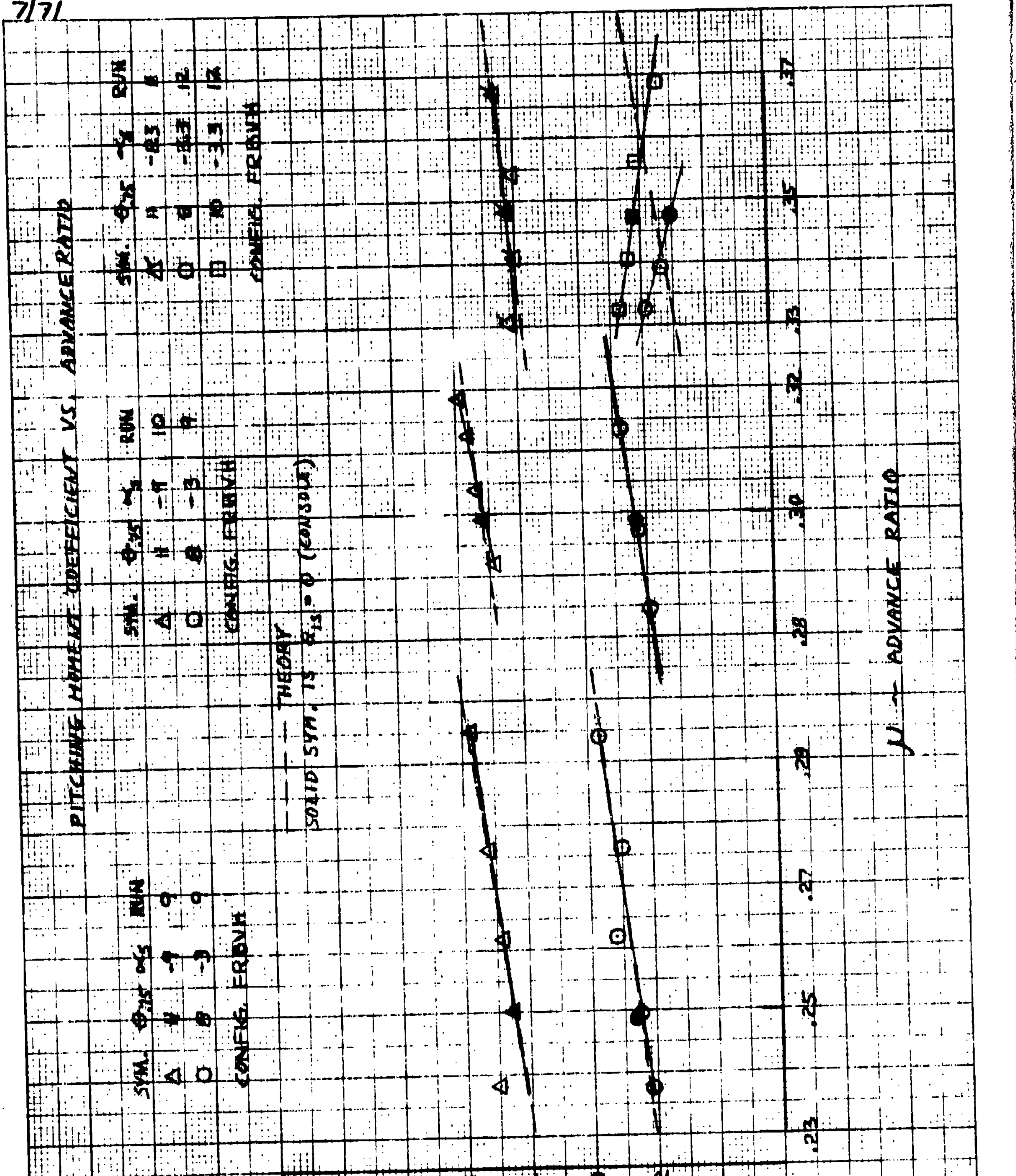

LATERAL FLAPPING VS. COLLECTIVE PITCH
NOTE: SOLID SYM. IS b_{1s} = O (CONSOLE)
SYM. | α_S | CONFIG.
O | -3 | FRBV
Δ | -4 | FRBV
— THEORY
μ = .25
μ = .30
μ = .35
b_{1s} DEG.
$\theta_{.75}$ ~ DEGREES

FIG. 25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PITCHING MOMENT COEFFICIENT VS. ADVANCE RATIO
SYM.
RUN
CONFIG. FRBVH
CONFIG. FRBVH
CONFIG. FRBVH
THEORY
SOLID SYM. IS R_{1S} = 0 (CONSOLE)
μ - ADVANCE RATIO
C_m/σ
.008
.007
.006
.005
.004
.003
.002
.001
0
.23
.25
.27
.30
.32
.35
.37

FIG. 26

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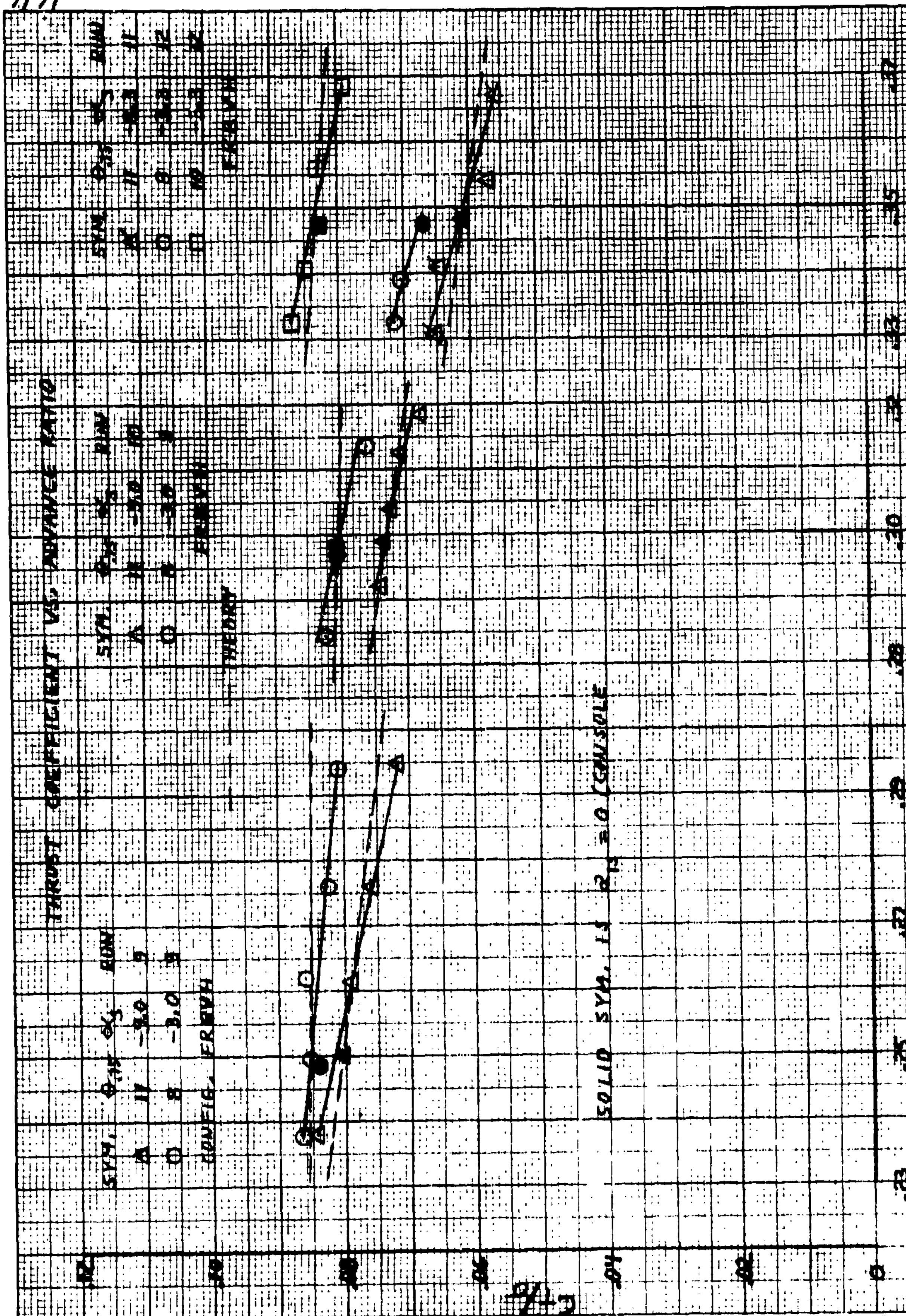
THRUST COEFFICIENT VS. ADVANCE RATIO
CONFIG. ERBVH
THEORY
SOLID SYM. IS

FIG. 27

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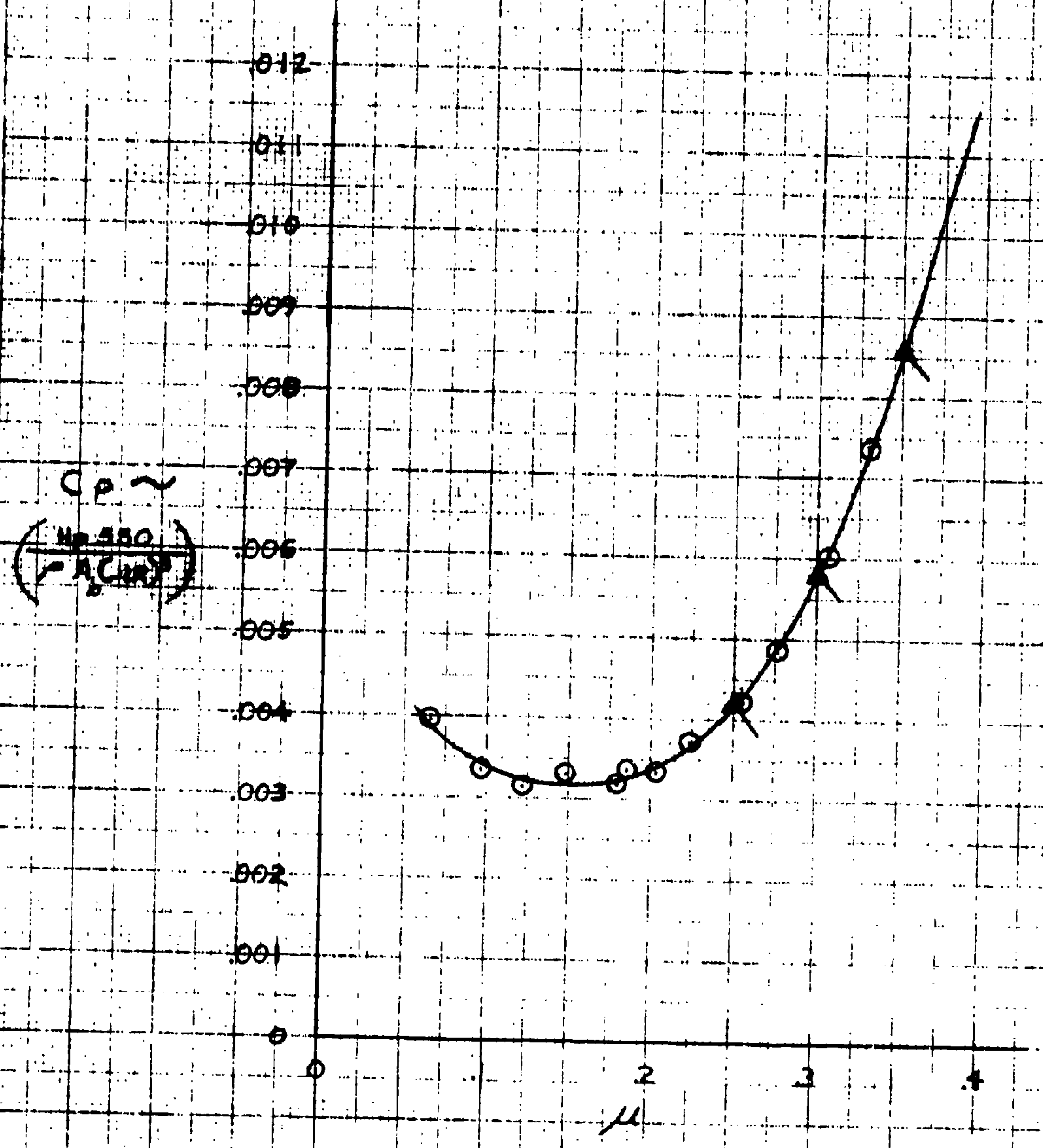
COMPARISON OF LEVEL FLIGHT PERFORMANCE

O ~ FROM FIG. 32 USATECOM FLT TEST REPORT* (REF. 8)

▲ ~ FROM AMES WIND TUNNEL TEST (369-4216) WITH 1.30 FT FLAT PLATE AREA SUBTRACTED



* PROJECT No. 4-3-0250-51/52/53 (PART 2) (GROSS WT = 2090 LBS, ROTOR SPEED = 469 RPM)

FIG. 28

7-23-68

RZ7

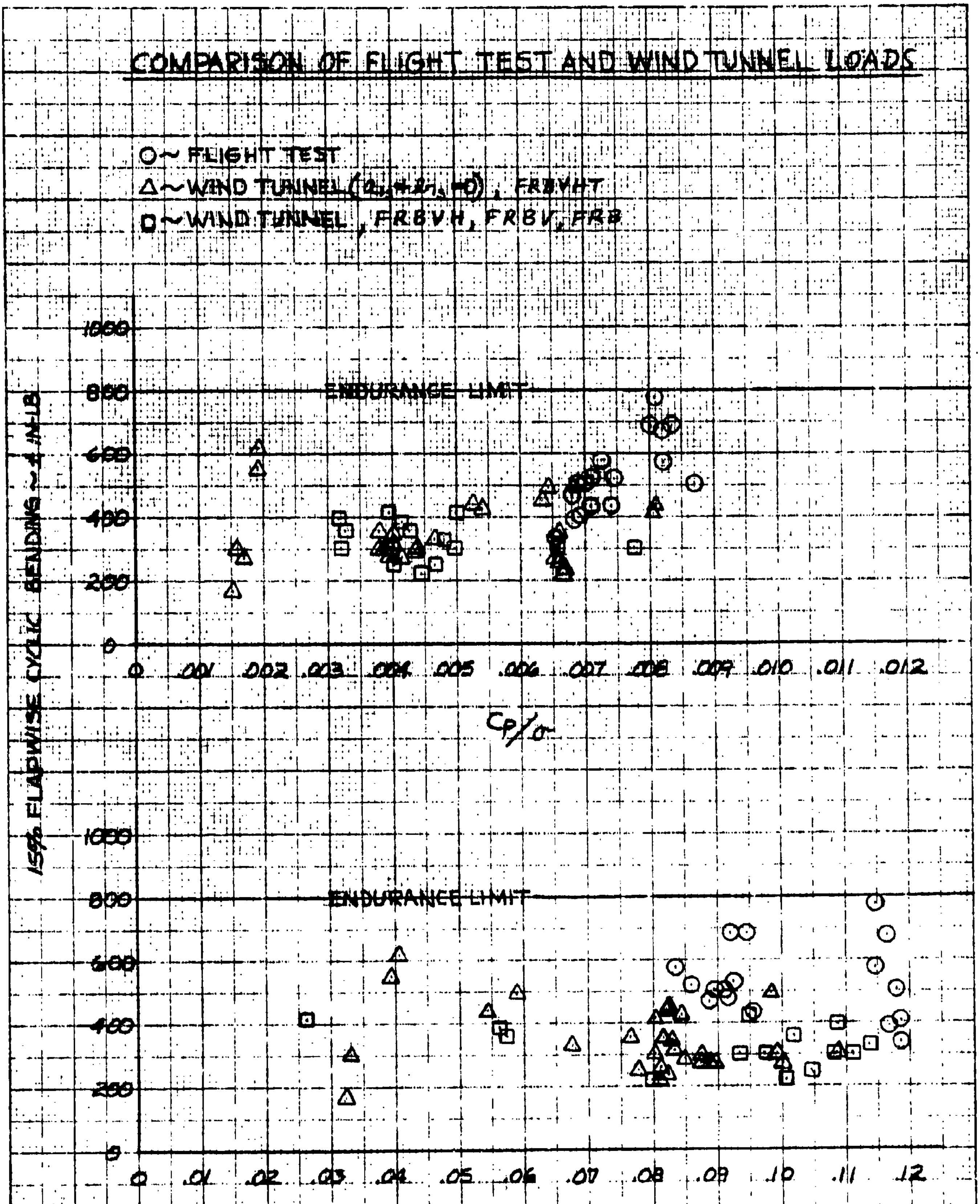


FIG. 29 R.Z.7. 3-26-69

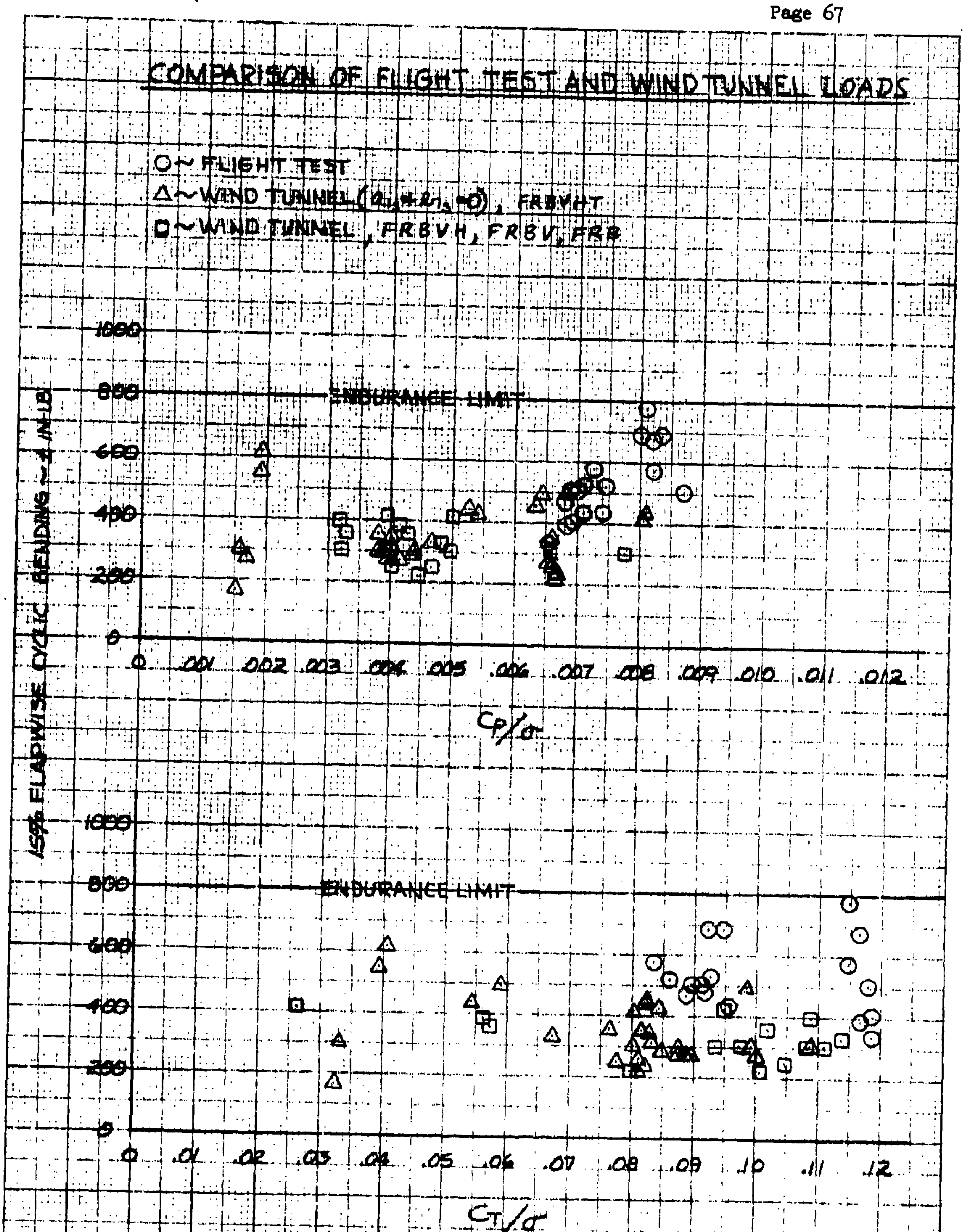


FIG. 29 R.Z.T. 3-26-69

COMPARISON OF FLIGHT TEST AND WIND TUNNEL LOADS

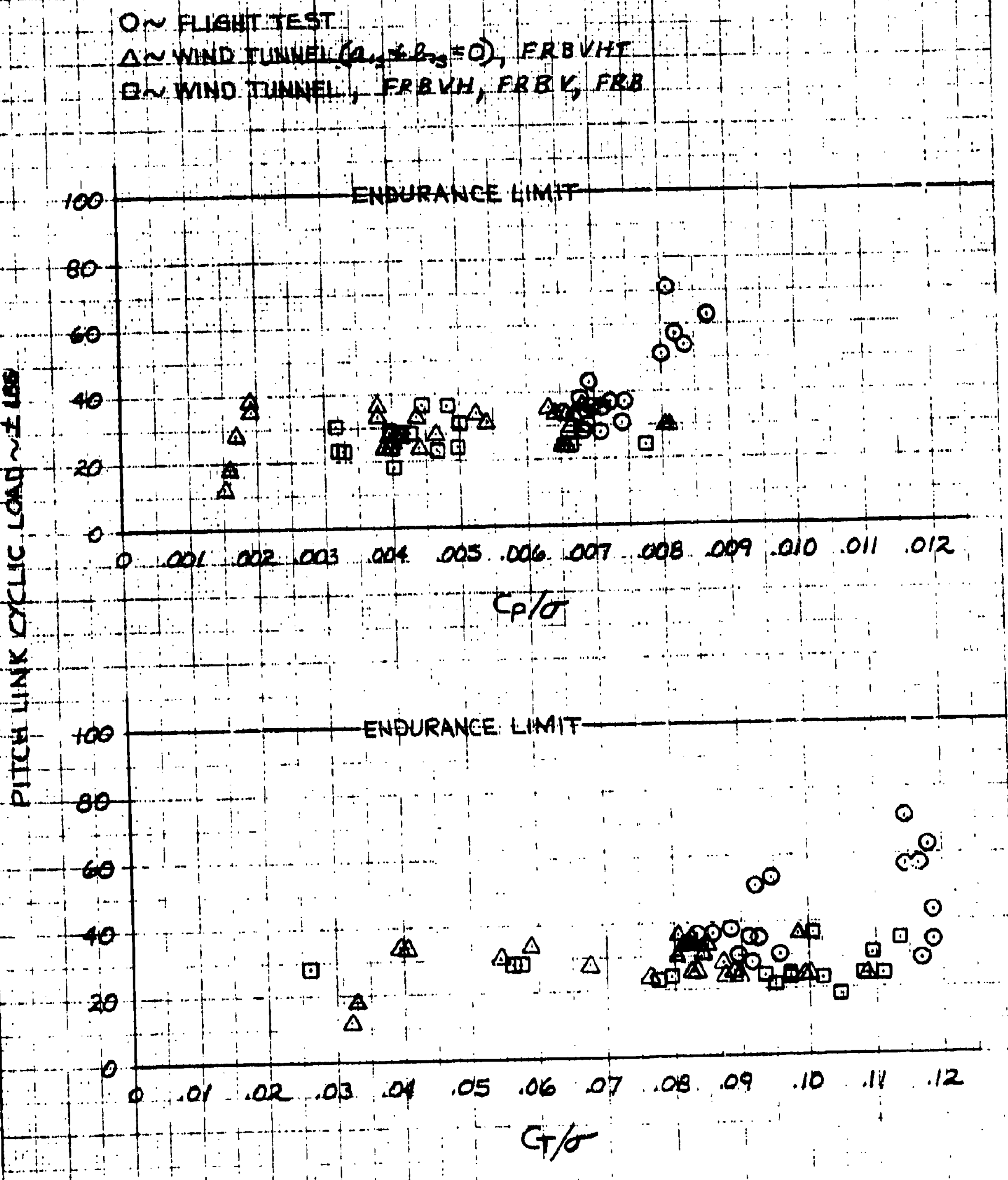


FIG. 30 R.Z.7. 3-27-69

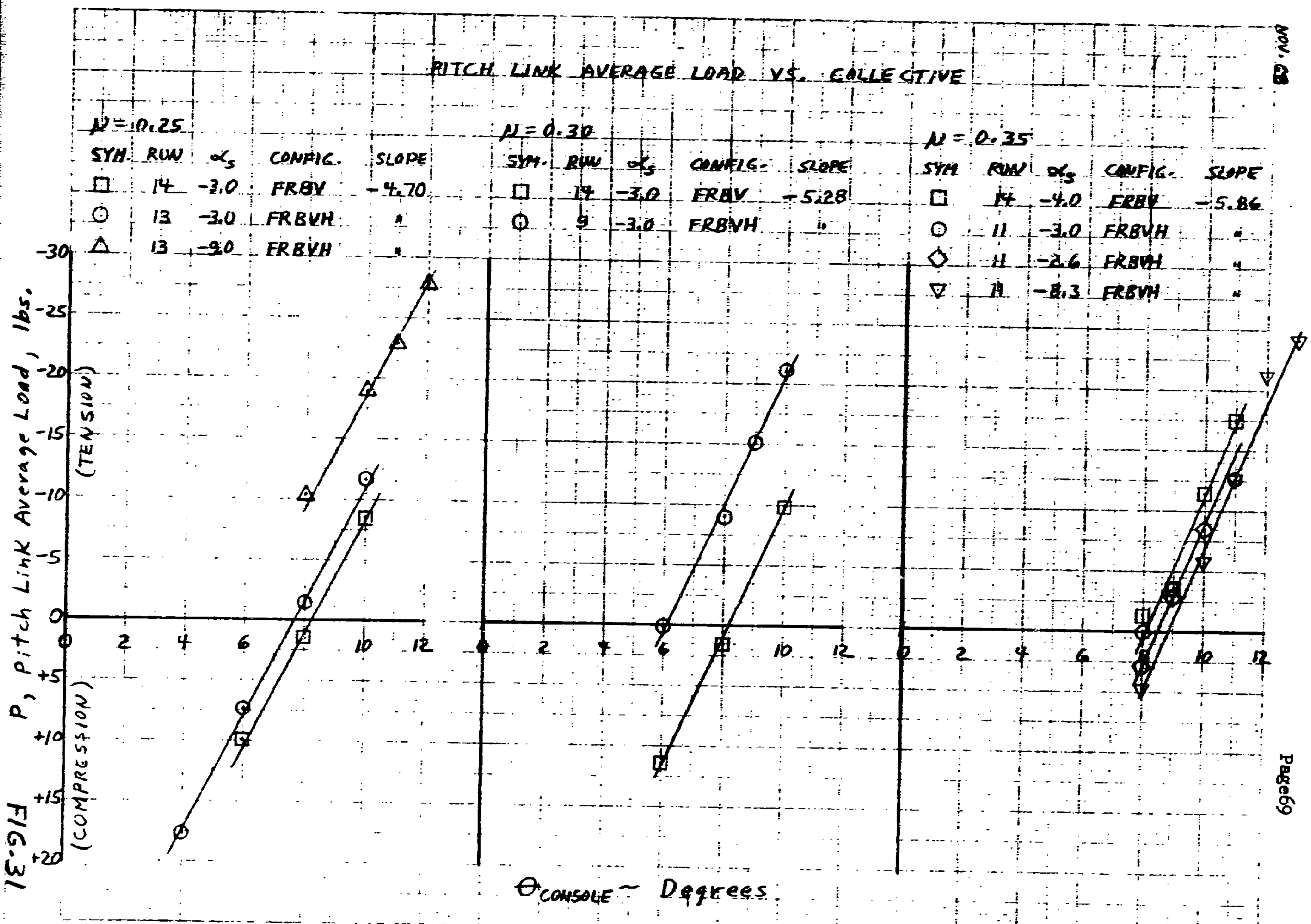
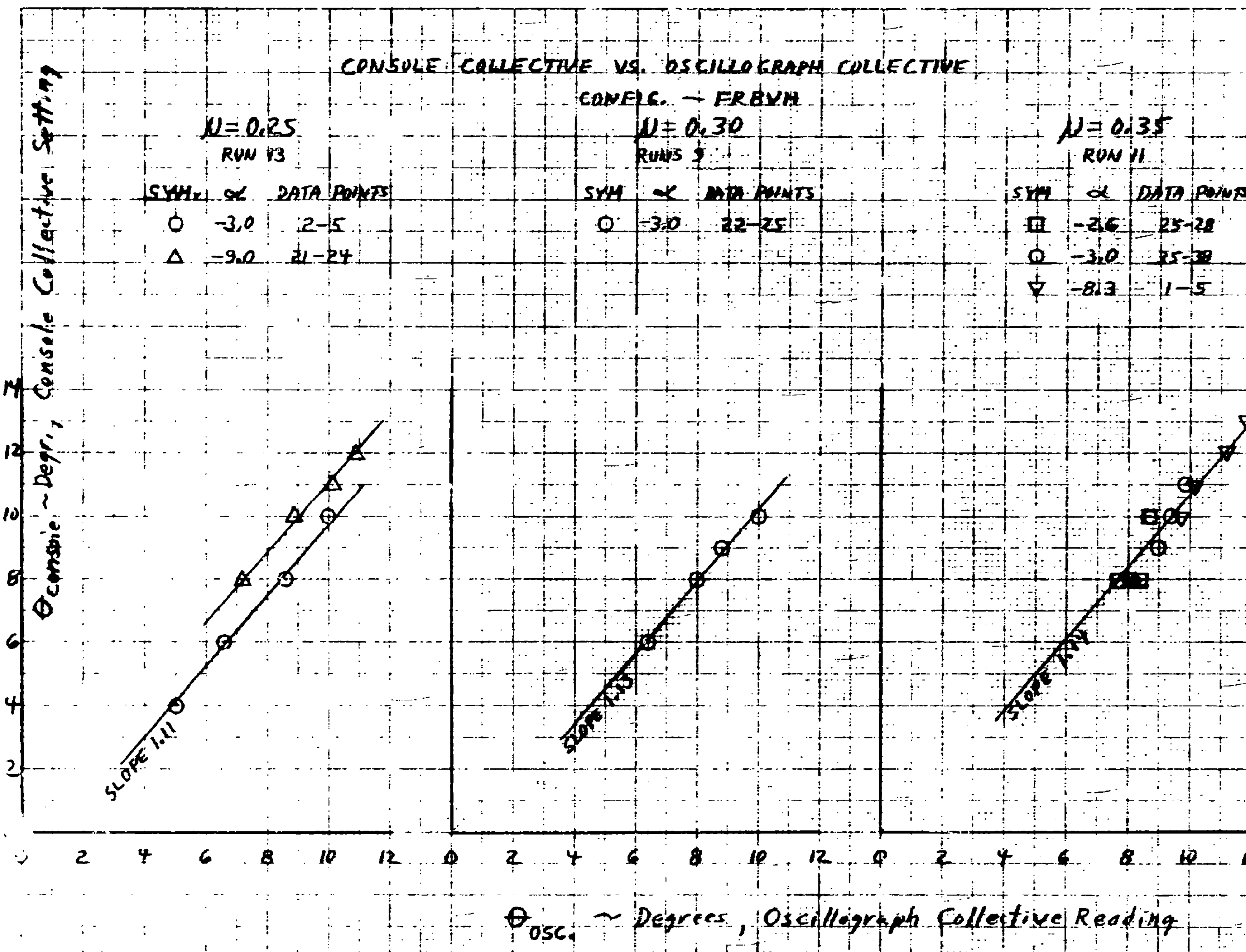

NOV. 68
PITCH LINK AVERAGE LOAD VS. COLLECTIVE
μ = 0.25
SYM. RUN α_s CONFIG. SLOPE
□ 14 -3.0 FRBV -4.70
○ 13 -3.0 FRBVH "
△ 13 -9.0 FRBVH "
μ = 0.30
SYM. RUN α_s CONFIG. SLOPE
□ 14 -3.0 FRBV -5.28
○ 9 -3.0 FRBVH "
μ = 0.35
SYM RUN α_s CONFIG. SLOPE
□ 14 -4.0 FRBV -5.86
○ 11 -3.0 FRBVH "
◇ 11 -2.6 FRBVH "
▽ 11 -8.3 FRBVH "
P, Pitch Link Average Load, lbs.
(TENSION)
(COMPRESSION)
-30
-25
-20
-15
-10
-5
0
+5
+10
+15
+20
0 2 4 6 8 10 12
$\theta_{CONSOLE}$ ~ Degrees

FIG. 31


13 NOV. 68
CONSOLE COLLECTIVE VS. OSCILLOGRAPH COLLECTIVE
CONFIG. — FRBVH
μ = 0.25
RUN 13
SYM. α DATA POINTS
○ -3.0 2-5
△ -9.0 21-24
μ = 0.30
RUNS 9
SYM α DATA POINTS
○ -3.0 22-25
μ = 0.35
RUN 11
SYM α DATA POINTS
⊞ -2.6 25-28
○ -3.0 35-38
▽ -8.13 1-5
SLOPE 1.11
θconsole ~ Degr., Console Collective Setting
θOSC. ~ Degrees, Oscillograph Collective Reading

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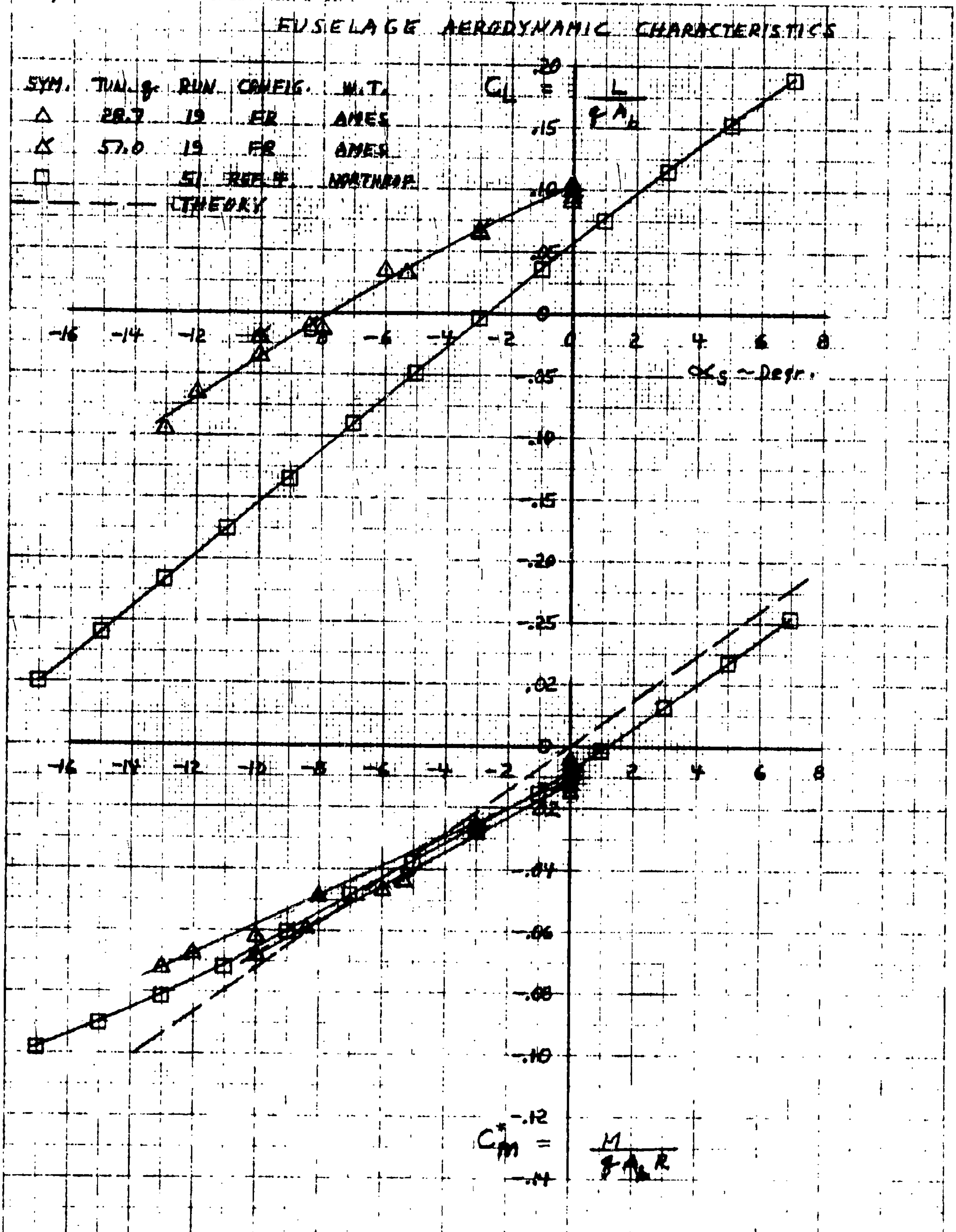

FIG. 33

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FUSELAGE + TAIL AERODYNAMIC CHARACTERISTICS

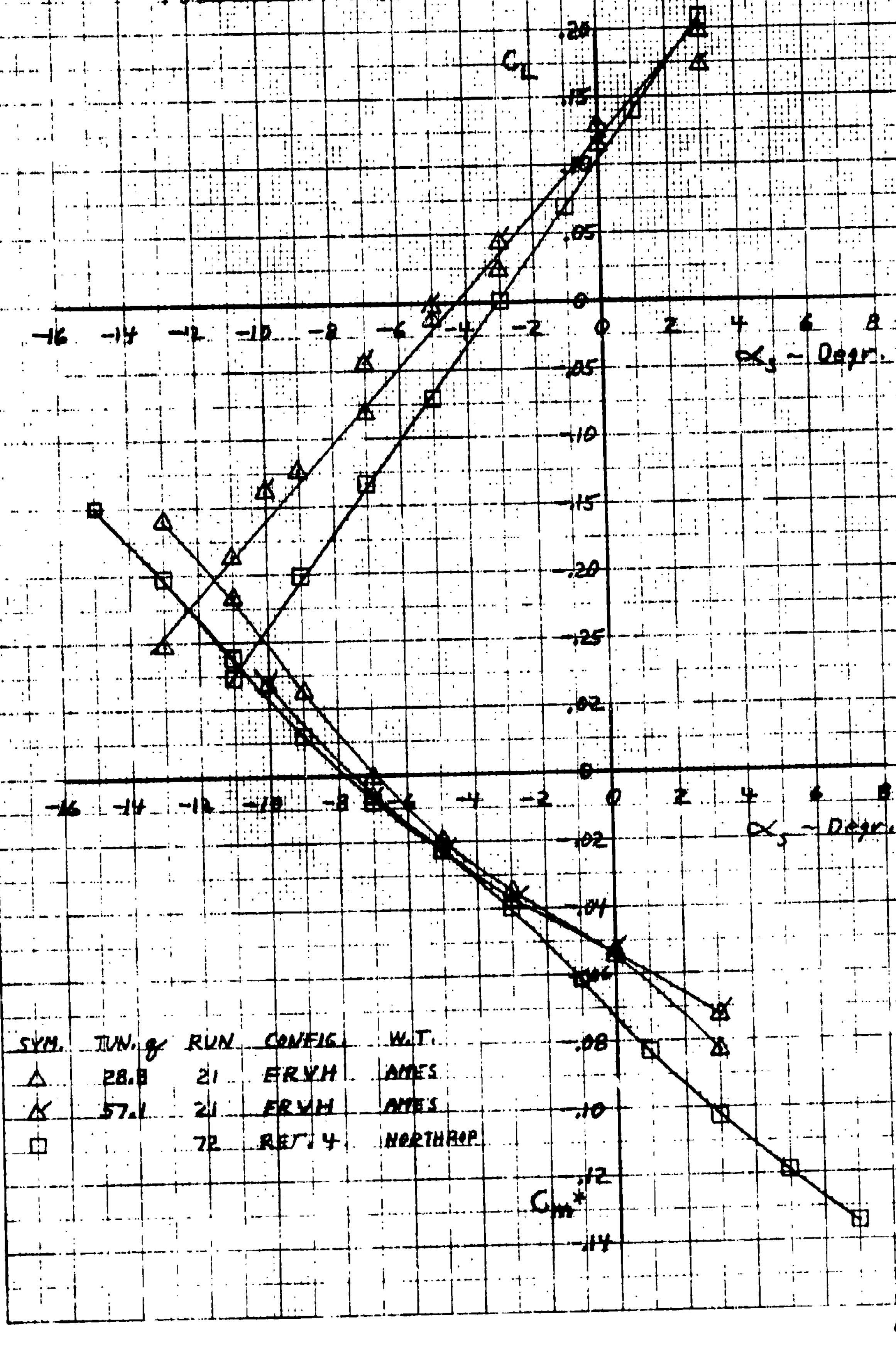

FIG. 34

TIME HISTORIES OF ROTOR LOADS

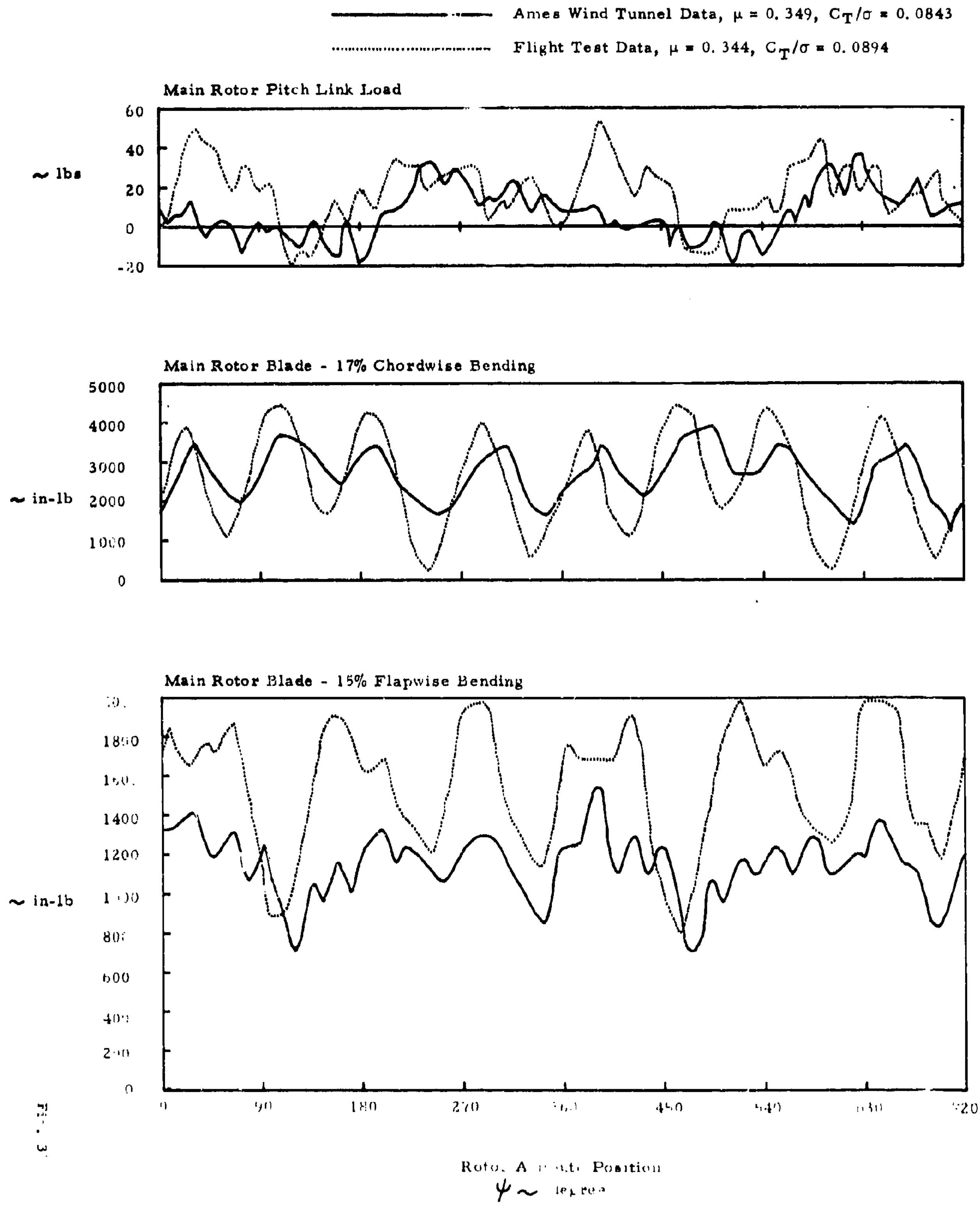

Fig. 3

OUT

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/21/68

TEST 316.0 RUN 2 STATIC 1 UPDATE = 6 17 68 1500 TIME 457.09

B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = 496.0, END VALUE = 500.0 COUNTS. END VALUE WILL BE USED.

BAROMETRIC PRESSURE = 30.01

CONFIG. FRBVHT

PT AVC	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1	-3.00	2.85	28.79	1510.	309.	13.	588.	52.	199.	79.0	645.4	65.0	
1	-7.25	0.2321	93.31	1.7469	0.2222	0.0282	0.0524	-0.0271	0.0317	0.0023514	-0.0008566	0.5744	468.
	-5.85	3.31	0.2440	0.052021	-0.006618	0.000841	0.001561	-0.000808	0.000944	0.0036649	0.0004569	0.7146	4.0
2	-3.00	3.50	28.89	1960.	285.	13.	566.	149.	241.	92.1	637.1	66.0	
1	-4.87	0.2321	93.47	2.2675	0.1931	0.0271	0.0562	-0.0180	0.0351	0.0028517	-0.0006089	0.5671	462.
	-6.50	4.14	0.2476	0.069519	-0.005920	0.000831	0.001541	-0.000553	0.001077	0.0037869	0.0003263	0.7075	6.0
3	-3.00	4.35	28.68	2360.	253.	-5.	1004.	328.	97.	111.6	623.3	66.0	
1	-3.27	0.2322	93.12	2.7555	0.1576	0.0097	0.0899	-0.0030	0.0230	0.0036873	-0.0001326	0.5548	492.
	-7.35	4.65	0.2522	0.087603	-0.005011	0.000307	0.002857	-0.000094	0.000731	0.0041230	0.0003031	0.6947	8.0
4	-3.00	5.90	28.86	2855.	213.	-14.	1582.	668.	81.	149.4	628.8	69.0	
1	-1.88	0.2308	93.70	3.3169	0.1091	-0.0031	0.0961	0.0280	0.0209	0.0048383	0.0008484	0.5581	456.
	-8.90	4.85	0.2515	0.104895	-0.003449	-0.000097	0.003040	0.000884	0.000662	0.0045155	0.0005259	0.6985	12.0
5	-8.00	3.05	28.82	1225.	204.	31.	1062.	225.	422.	98.2	595.7	69.0	
1	-4.14	0.2308	93.62	1.4077	0.1018	0.0473	0.0945	-0.0112	0.0459	0.0037388	-0.0006137	0.5287	437.
	-11.05	2.93	0.2652	0.049520	-0.003582	0.001665	0.003326	-0.000393	0.001613	0.0044375	0.0003849	0.6699	6.0
6	-8.00	3.95	28.82	1705.	125.	27.	1313.	451.	296.	134.3	617.8	69.0	
1	-0.27	0.2308	93.62	1.9734	0.0092	0.0426	0.1169	0.0044	0.0364	0.0045856	-0.0000218	0.5483	448.
	-11.95	3.74	0.2558	0.064453	-0.000301	0.001395	0.003824	0.000145	0.001191	0.0042209	-0.0003865	0.6886	8.0
7	-8.00	4.80	28.84	2230.	45.	14.	1749.	697.	215.	179.5	631.6	70.0	
1	1.88	0.2304	93.75	2.5838	-0.0846	0.0271	0.1556	0.0309	0.0292	0.0057453	0.0008314	0.5600	450.
	-12.80	4.26	0.2505	0.081026	-0.002655	0.000851	0.004883	0.000968	0.000916	0.0043664	-0.0005475	0.7003	12.0
8	-13.00	3.50	28.77	975.	122.	83.	1702.	41.	723.	133.4	637.1	70.0	
1	-0.82	0.2304	93.63	1.1174	0.0159	0.0687	0.1517	-0.0114	0.0617	0.0041592	-0.0007690	0.5649	462.
	-16.50	2.10	0.2481	0.034376	-0.000490	0.002113	0.004668	-0.000351	0.001899	0.0041511	-0.0007771	0.7353	8.0
9	-13.00	2.65	28.68	525.	241.	92.	1303.	-202.	824.	98.6	628.8	70.0	
1	-14.83	0.2304	93.47	0.5909	0.1565	0.0807	0.1165	-0.0335	0.0713	0.0031967	-0.0015330	0.5576	456.
	-15.65	1.10	0.2509	0.018597	-0.004925	0.002541	0.003668	-0.001056	0.002243	0.0043949	-0.0003349	0.6975	6.0
10	-13.00	4.15	28.72	1475.	0.	82.	1929.	322.	496.	177.4	628.8	70.0	
1	4.27	0.2304	93.55	1.7073	-0.1274	0.0682	0.1723	0.0135	0.0417	0.0057543	0.0001196	0.5576	456.

		-17.15	3.05	0.2512	[illegible]	0.004017	0.002151	0.005431	0.000426	0.001314	0.0044319	-0.0012528	0.6976	10.0
11		-3.00	3.75	41.91	1810.	468.	7.	979.	-63.	399.	90.9	628.8	70.0	
	1	-9.48	0.2290	113.36	1.4391	0.2434	-0.0460	0.0599	-0.0089	0.0228	0.0029680	-0.0004646	0.5576	456.
		-6.75	3.27	0.3043	0.066619	-0.011129	-0.002128	0.002774	-0.000410	0.001056	0.0059576	0.0012525	0.7272	6.0
12		-3.00	5.20	41.79	2210.	447.	3.	808.	-9.	293.	117.3	620.5	72.0	[illegible]
	1	-7.24	0.2281	113.41	1.7666	0.2245	-0.0492	0.0496	-0.0056	0.0164	0.0040003	-0.0003046	0.5492	450.
		-8.20	3.66	0.3085	0.084051	-0.010684	-0.002343	0.002359	-0.000264	0.000779	0.0066730	0.0023681	0.7186	8.0
13		-3.00	6.05	41.93	2445.	421.	-4.	987.	169.	325.	126.5	628.8	72.0	[illegible]
	1	-5.92	0.2281	113.61	1.9498	0.2023	-0.0540	0.0604	0.0053	0.0182	0.0041460	0.0002018	0.5565	456.
		-9.05	4.07	0.3049	0.090657	-0.009406	-0.002511	0.002838	0.000246	0.000848	0.0062813	0.0023371	0.7262	10.0
14		-13.00	3.30	41.98	535.	411.	118.	2389.	-745.	985.	115.3	623.3	72.0	
	1	-26.90	0.2281	113.67	0.4078	0.2069	0.0013	0.1276	-0.0337	0.0418	0.0038805	-0.0020011	0.5516	452.
		-16.30	0.89	0.3076	0.019321	-0.009800	0.000063	0.006046	-0.001596	0.001981	0.0068642	0.0009826	0.7215	8.0
15		-13.00	3.70	42.17	740.	358.	89.	2073.	-259.	988.	139.3	628.8	72.0	
	1	-15.94	0.2281	113.93	0.5701	0.1628	-0.0222	0.1261	-0.0040	0.0417	0.0045632	-0.0006205	0.5565	456.
		-16.70	1.23	0.3058	0.026658	-0.007614	-0.001038	0.005897	-0.000186	0.001952	0.0068284	0.0016447	0.7267	9.0
16		-13.00	4.35	42.22	995.	297.	89.	1858.	-88.	988.	168.0	631.6	72.0	
	1	-8.36	0.2281	114.00	0.7735	0.1137	-0.0222	0.1129	0.0064	0.0417	0.0054323	-0.0001462	0.5590	458.
		-17.35	1.62	0.3047	0.035894	-0.005275	-0.001032	0.005238	0.000297	0.001934	0.0069243	0.0013457	0.7293	10.0
17		-13.00	5.45	41.77	1550.	146.	120.	2509.	-138.	890.	225.0	623.3	72.0	
	1	0.26	0.2281	113.38	1.2310	-0.0057	0.0033	0.1541	0.0034	0.0363	0.0075694	-0.0002287	0.5516	452.
		-18.45	2.52	0.3070	0.058020	0.000268	0.000157	0.007262	0.000160	0.001710	0.0071888	-0.0006093	0.7210	12.0
18		-8.00	5.20	41.98	1875.	289.	41.	1327.	-55.	730.	170.9	642.6	73.0	
	1	-3.80	0.2277	113.78	1.4852	0.0986	-0.0203	0.0811	-0.0080	0.0392	0.0052567	-0.0005955	0.5682	466.
		-13.20	3.15	0.2969	0.066325	-0.004404	-0.000907	0.003622	-0.000355	0.001751	0.0061726	0.0005204	0.7380	10.0
19		-8.00	6.55	42.26	2315.	215.	61.	2000.	-55.	711.	215.6	628.8	73.0	
	1	-1.18	0.2276	114.17	1.8268	0.0378	-0.0043	0.1214	-0.0080	0.0378	0.0070771	-0.0006186	0.5560	456.
		-14.55	3.64	0.3065	0.085780	-0.001774	-0.000204	0.005699	-0.000375	0.001774	0.0069676	-0.0007281	0.7264	11.0
20		-8.00	4.70	42.08	1635.	324.	41.	1640.	-152.	603.	155.3	637.1	73.0	
	1	-5.59	0.2276	113.91	1.2891	0.1262	-0.0203	0.1000	-0.0139	0.0314	0.0049010	-0.0008264	0.5633	462.
		-12.70	2.78	0.3018	0.058703	-0.005745	-0.000925	0.004554	-0.000634	0.001430	0.0063241	0.0005967	0.7333	9.0
21		-8.00	4.35	41.96	1390.	353.	27.	1560.	-184.	676.	135.8	642.6	73.0	
	1	-7.81	0.2277	113.75	1.0956	0.1503	-0.0316	0.0954	-0.0159	0.0359	0.0041773	-0.0009242	0.5682	466.
		-12.35	2.45	0.2988	0.048896	-0.006708	-0.001409	0.004257	-0.000708	0.001604	0.0059638	0.0008623	0.7387	8.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	G	OMEGA	POW
TOTAL COUNTS..	0.	500.	11461.	11573.	15200.	3286.	3163.	9201.	9196.	6.500	499.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57302.5	57862.5	15200.0	8215.0	7906.3	9201.0	9195.5	0.162	1376.	

T = 2

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

06/27/68
TIME 457.39

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.0 RUN 2

CONFIG. FRBVHT

LOH HELICOPTER SKEWER TARE TAIL ON

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M(1.0)(90)
1.	4.0	-3.0	-5.8	0.052021	-0.006618	0.000841	0.000944	0.001561	-0.000808	0.0023514	0.0036649	0.244	0.715
2.	6.0	-3.0	-6.5	0.069519	-0.005920	0.000831	0.001077	0.001541	-0.000553	0.0028517	0.0037869	0.248	0.7[illegible]7
3.	8.0	-3.0	-7.3	0.087603	-0.005011	0.000307	0.000731	0.002857	-0.000094	0.0036873	0.0041230	0.252	0.695
4.	10.0	-3.0	-8.3	0.104895	-0.003449	-0.000097	0.000662	0.003340	0.000884	0.0048381	0.0045155	0.251	0.678
5.	6.0	-8.0	-11.0	0.049520	-0.003582	0.001665	0.001613	0.003326	-0.000393	0.0037388	0.0044375	0.265	0.669
6.	8.0	-8.0	-11.9	0.064453	-0.000301	0.001395	0.001191	0.003824	0.000145	0.0045856	0.0042209	0.256	0.689
7.	10.0	-8.0	-12.8	0.081086	0.002655	0.000851	0.000916	0.004883	0.000968	0.0057453	0.0043664	0.251	0.709
8.	8.0	-13.0	-16.5	0.034376	-0.000490	0.002113	0.001899	0.004668	-0.000351	0.0041592	0.0041511	0.248	0.7[illegible]5
9.	6.0	-13.0	-15.6	0.018597	-0.004925	0.002541	0.002243	0.003668	-0.001056	0.0031967	0.0043949	0.251	0.697
10.	10.0	-13.0	-17.1	0.053826	0.004017	0.002151	0.001314	0.005431	0.000426	0.0057543	0.0044[illegible]19	0.251	0.698
11.	6.0	-3.0	-6.7	0.066619	-0.011129	-0.002128	0.001056	0.002774	-0.000410	0.0029680	0.0059[illegible]76	0.304	0.727
12.	8.0	-3.0	-8.2	0.084051	-0.010684	-0.002343	0.000779	0.002359	-0.000264	0.00400[illegible]3	0.0066730	0.308	0.719
13.	9.0	-3.0	-9.0	0.090657	-0.009406	-0.002511	0.000848	0.002808	0.000246	0.0041463	0.0062813	0.305	0.726
14.	8.0	-13.0	-16.3	0.019321	-0.009800	0.000063	0.001981	0.006346	-0.001596	0.0038805	0.0068642	0.308	0.721
15.	9.0	-13.0	-16.7	0.026658	-0.007614	-0.001038	0.001952	0.005897	-0.000186	0.0045632	0.0068284	0.306	0.727
16.	10.0	-13.0	-17.3	0.035894	-0.005275	-0.001032	0.001934	0.005238	0.000297	0.0054323	0.0069243	0.305	0.729
17.	12.0	-13.0	-18.4	0.058020	0.000268	0.000157	0.001710	0.007262	0.00016[illegible]	0.0075694	0.0071888	0.307	0.721
18.	10.0	-8.0	-13.2	0.066325	-0.004434	-0.000907	0.001751	0.003622	-0.000355	0.0052567	0.0061726	0.299	0.738
19.	12.0	-8.0	-14.5	0.085780	-0.001774	-0.000204	0.001774	0.005699	-0.000375	0.0070771	0.0069676	0.306	0.726
20.	9.0	-8.0	-12.7	0.058703	-0.005745	-0.000925	0.001430	0.004554	-0.000634	0.00490[illegible]	0.0063241	0.302	0.733
21.	8.0	-8.0	-12.3	0.048896	-0.006708	-0.001409	0.001604	0.004257	-0.000708	0.0041773	0.0059638	0.299	0.738

ROTOR SCALE DATA PROGRAM 533 - WIND AXES 06/20/68

UPDATE = 6 17 68 1500 TIME 457.29

TEST 1 0 RUN 3 STATIC 1

B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = 500.0, END VALUE = 489.0 COUNTS. END VALUE WILL BE USED.

SOME OF THESE ZEROES DISAGREE BY MORE THAN 25 COUNTS.

	FL+	RL+	D	Q	FL-	RL-	CF	CR	POWER
END	11458.	11572.	15202.	12.	3321.	3133.	9201.	9205.	495.
BEGINNING	11460.	11571.	15200.	0.	3295.	3155.	9201.	9199.	495.

(ZEROES AVERAGED ANYWAY.)

BAROMETRIC PRESSURE = 30.03

CONFIG. FRBVHT

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPD	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1	0.00	2.60	55.80	933.	787.	-17.	-50.	233.	152.	-[illegible]	648.1	71.0	
1	-31.25	0.2271	131.33	0.5395	0.3273	-0.0171	-0.0023	-0.0136	0.0173	-0.000[illegible]	-0.0007954	0.5742	470.
	-2.60	1.65	0.3420	0.031547	-0.019140	-0.000998	-0.000133	-0.000795	0.001014	0.0064667	0.0056713	0.7735	0.0
2	0.00	2.70	55.80	878.	781.	-20.	-32.	195.	231.	46.8	642.6	79.0	
1	-32.60	0.2238	132.31	0.5062	0.3237	-0.0189	-0.0015	-0.0140	0.0210	0.0014640	-0.0008451	0.5650	466.
	-2.70	1.30	0.3475	0.030564	-0.019544	-0.001140	-0.000089	-0.000845	0.001266	0.0081830	0.0058738	0.7614	0.0
3	-3.00	5.00	55.87	1678.	688.	-37.	826.	154.	467.	96.2	642.6	80.0	
1	-15.07	0.2234	132.52	0.9848	0.2651	-0.0111	0.0379	-0.0235	0.0341	0.0030151	-0.0015301	0.5645	466.
	-8.00	2.46	0.3481	0.059653	-0.016058	-0.000672	0.002298	-0.001424	0.002066	0.0083262	0.0037810	0.7610	6.0
4	-3.00	6.60	55.92	2023.	658.	-32.	752.	63.	504.	125.3	645.4	82.0	
1	-11.68	0.2225	132.82	1.1923	0.2466	-0.0077	0.0345	-0.0279	0.0359	0.0036926	-0.0017913	0.5659	468.
	-9.60	2.82	0.3474	0.071936	-0.014875	-0.000464	0.002080	-0.001680	0.002165	0.0086546	0.0029707	0.7624	8.0
5	-3.00	8.40	55.89	2388.	621.	-33.	825.	393.	531.	158.6	642.6	83.0	
1	-9.02	0.2221	132.92	1.4135	0.2244	-0.0085	0.0379	-0.0126	0.0371	0.0049985	-0.0038861	0.5629	466.
	-11.40	3.17	0.3491	0.086134	-0.013674	-0.000517	0.002308	-0.000769	0.002259	0.0091541	0.0033095	0.7595	10.0
6	-3.00	10.15	56.03	2643.	581.	-29.	1017.	583.	552.	203.2	639.9	84.0	
1	-7.26	0.2217	133.21	1.5635	0.1991	-0.0049	0.0466	-0.0344	0.0382	0.0065905	-0.0003953	0.5600	464.
	-13.15	3.24	0.3514	0.096522	-0.012294	-0.000305	0.002874	-0.000272	0.002361	0.0100992	0.0032038	0.7568	12.0
7	-8.00	5.00	55.80	1138.	594.	13.	1712.	-3.	883.	130.[illegible]	642.6	87.0	
1	-17.90	0.2265	133.29	0.6555	0.2118	0.0169	0.0787	-0.0301	0.0494	0.0041271	-0.0022476	0.5609	466.
	-13.00	1.67	0.3501	0.040173	-0.012977	0.001035	0.004822	-0.001844	0.003026	0.0085448	0.0021701	0.7572	8.0
8	-8.00	6.35	55.82	1558.	532.	28.	1624.	-83.	869.	169.0	642.6	88.0	
1	-10.83	0.2201	133.44	0.9094	0.1740	0.0[illegible]61	0.0746	-0.0338	0.0487	0.0053752	-0.0024725	0.5604	466.
	-14.35	2.22	0.3505	0.055856	-0.010690	0.001605	0.004583	-0.002076	0.002934	0.0088798	0.0021322	0.7568	10.0
9	-8.00	7.70	55.85	1993.	463.	3[illegible].	1933.	-54.	769.	217.0	642.6	88.[illegible]	
1	-6.43	0.2201	133.47	1.1721	0.1321	0.03[illegible]5	0.0888	-0.0326	0.0442	0.0069051	-0.0023604	0.5604	[illegible]
	-15.70	2.69	0.3506	0.072024	-0.008120	0.001877	0.005457	-0.002002	0.002715	0.0093491	0.0000836	0.7568	12.0
10	-8.00	8.60	56.01	2178.	433.	30.	2005 2308.	86.	931.	244.1	645.4	90.[illegible]	
1	-5.05	0.2193	133.91	1.2800	0.1130	0.0287	0.1057	-0.0267	0.0534	0.0076947	-0.0023504	0.5617	468.
	-16.60	2.83	0.3502	0.078503	-0.006930	0.001762	0.006484	-0.001636	0.003091	0.0096433	-0.0001918	0.7585	13.0
11	-12.00	5.35	55.78	746.	569.	42.	2214 2556.	-148.	1177.	152.1	648.1	89.0	
1	-25.94	0.2197	133.51	0.4200	0.2043	0.0051	0.1176	-0.0248	0.0532	0.0047235	-0.0021351	0.5647	470.
	-17.35	1.01	0.3477	0.025385	-0.012346	0.000307	0.007110	-0.001500	0.003215	0.0089653	0.0021067	0.7610	13.0
12	-12.00	6.60	55.80	1218.	455.	70.	2426 2949.	-60.	1327.	211.5	645.4	9[illegible]	
1	-10.86	0.2193	133.66	0.7044	0.1351	0.0222	0.1356	-0.0208	0.0601	0.0066653	-0.0020095	0.5617	468.
	-18.60	1.64	0.3496	0.043021	-0.008252	0.00135[illegible]	0.00828[illegible]	-0.001273	0.003673	0.00940[illegible]	0.0007320	0.7581	12.0
13	-12.00	7.25	55.87	1468.	407.	86.	2600 2960.	-179.	1318.	242.8	645.4	91.0	
1	-7.05	0.2189	133.86	0.8545	0.1056	0.0336	0.13[illegible]	-0.0265	0.0598	0.0076670	-0.0023512	0.5612	468.
	-19.25	1.93	0.3501	0.052368	-0.006472	0.002058	0.008329	-0.001625	0.003662	0.0097197	-0.0002985	0.7577	13.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	489.	11459.	11572.	152[illegible]	332[illegible]	3144.	9201.	9202.	6.000	500.	495.
TOTAL PHYS. UNITS..	0.0	24.4	57295.0	57857.5	1520[illegible]	8270.[illegible]	7860.0	9201.0	9202.0	0.150	1379.	

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

06/2./68
TIME 457.09

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.0 RUN 3

CONFIG. FRBVHT

LOH HELICOPTER SKEWER TARE TAIL ON

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPU	V/OR	M(1.0)(90)
1.	0.0	0.0	-2.6	0.031547	-0.019140	-0.000998	0.001014	-0.000133	-0.000795	-0.0000000	0.0064657	0.342	0.771
2.	3.0	0.0	-2.7	0.030564	-0.019544	-0.001140	0.001266	-0.000089	-0.000845	0.0014640	0.0081830	0.348	0.761
3.	6.0	-3.0	-8.0	0.059653	-0.016058	-0.000672	0.002066	0.002298	-0.001424	0.0030151	0.0083262	0.348	0.761
4.	8.0	-3.0	-9.6	0.071936	-0.014875	-0.000464	0.002165	0.002080	-0.001689	0.0038926	0.0086546	0.347	0.762
5.	10.0	-3.0	-11.4	0.086134	-0.013674	-0.000517	0.002259	0.002308	-0.000769	0.0049985	0.0091941	0.349	0.759
6.	12.0	-3.0	-13.1	0.096522	-0.012294	-0.000305	0.002361	0.002874	-0.000272	0.0065005	0.0100992	0.351	0.757
7.	8.0	-8.0	-13.0	0.040173	-0.012977	0.001035	0.003026	0.004822	-0.001844	0.0041271	0.0085448	0.350	0.757
8.	10.0	-8.0	-14.3	0.055856	-0.010690	0.001605	0.002994	0.004583	-0.002076	0.0053752	0.0088798	0.350	0.757
9.	12.0	-8.0	-15.7	0.072024	-0.008120	0.001877	0.002715	0.005457	-0.002002	0.0069051	0.0093491	0.351	0.757
10.	13.0	-8.0	-16.6	0.078503	-0.006930	0.001762	0.003091	0.006484	-0.001636	0.0076947	0.0096433	0.352	0.758
11.	10.0	-12.0	-17.3	0.025385	-0.012346	0.000307	0.003215	0.007110	-0.001500	0.0047235	0.0089653	0.348	0.761
12.	12.0	-12.0	-18.6	0.043031	-0.008252	0.001357	0.003673	0.008282	-0.001273	0.0066653	0.0094058	0.350	0.758
13.	13.0	-12.0	-19.2	0.052368	-0.006472	0.002358	0.003662	0.008329	-0.001625	0.0076670	0.0097197	0.350	0.758

ROTOR SCALE DATA * PROGRAM LA3539 * WIND AXES 06/21/68

TEST 316.1 RUN 9 STATIC 2 UPDATE = 6 17 68 1500 TIME 780.73

STATIC NO. CHANGES FROM 2 TO 3 ON PT 103. LAST STATIC NO ENCOUNTERED IS THE ONE ACTUALLY USED.

(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WON'T HELP.)

SOME OF THESE ZEROES DISAGREE BY MORE THAN 25 COUNTS.	FL+	RL+	C	Q	FL-	RL-	CF	CR	POWER
END	11459.	11574.	15203.	0.	3319.	3125.	5208.	9196.	494.
BEGINNING	11459.	11574.	15202.	3.	3296.	3153.	5260.	9201.	494.

(ZEROES AVERAGED ANYWAY.)

BAROMETRIC PRESSURE = 29.34

CONFIG. ERBVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/CR	LIFT,L CL CLR	DRAG,D CD CXR	SIDE F,D CY CYR	PITCH,D CM CPY	YAW,L CN CPZ	ROLL,L CROLL CPX	HP CP CPC	OMEGA*R CC CCO	TEMP P,CMR M,AT	NOTES RPM THETA
1	[illegible]	1.25	29.3	215.	394.	-48.	244.	685.	173.	36.9	633.0	61.0	
1	-15.0	0.2338	93.37	0.9293	1.3195	-0.0621	0.0216	0.0373	0.0264	0.0011561	0.0011561	0.5681	459.
	-1.25	2.31	0.2491	0.026771	-0.039904	-0.001920	0.003668	0.001156	0.000818	0.0035314	0.0035314	0.7070	11.0
2	-9.0	5.25	29.05	2365.	-24.	-23.	1836.	1496.	318.	96.1	633.0	65.0	
1	3.58	0.2323	93.76	2.6854	-0.1629	-0.0223	0.1621	0.1040	0.0356	0.0030354	0.0030354	0.5639	459.
	-14.25	12.76	0.2500	0.081436	0.005293	-0.000697	0.005067	0.003250	0.001114	0.0010407	0.0010407	0.7049	11.0
3	-9.0	5.25	28.85	2235.	-25.	27.	1757.	1567.	522.	98.8	633.0	66.0	
1	3.64	0.2313	93.58	2.5852	-0.1645	0.0286	0.1560	0.1133	0.0544	0.0031258	0.0031258	0.5634	459.
	-14.25	11.58	0.2495	0.080492	0.005120	0.000889	0.004857	0.003433	0.001694	0.0011419	0.0011419	0.7040	11.0
4	-9.0	5.25	28.94	2190.	-31.	54.	1570.	1648.	695.	100.9	633.0	66.0	
1	3.65	0.2316	93.66	2.5285	-0.1702	0.0677	0.1392	0.1174	0.0873	0.0031916	0.0031916	0.5634	459.
	-14.25	11.65	0.2497	0.078855	0.005308	0.002111	0.004340	0.003662	0.002721	0.0011889	0.0011889	0.7041	11.0
5	-9.0	5.25	28.91	2270.	-19.	-63.	1935.	1422.	18.	93.3	633.0	67.0	
1	3.43	0.2311	93.71	2.6246	-0.1574	-0.0675	0.1717	0.0974	0.0056	0.0029567	0.0029567	0.5628	459.
	-14.25	13.07	0.2499	0.081923	0.004914	-0.002105	0.005361	0.003041	0.000300	0.0009983	0.0009983	0.7035	11.0
6	-9.03	5.25	28.89	2320.	-13.	-107.	2187.	1353.	-176.	89.9	633.0	67.0	
1	3.21	0.2311	93.67	2.6846	-0.1504	-0.1188	0.1924	0.0913	-0.0076	0.0028494	0.0028494	0.5628	459.
	-14.25	13.76	0.2498	0.083746	0.004692	-0.003705	0.006003	0.002848	-0.000236	0.0009137	0.0009137	0.7034	11.0
7	-9.0	5.45	28.54	2220.	-21.	-23.	1755.	1496.	275.	96.2	633.0	68.0	
1	3.56	0.2307	93.34	2.5635	-0.1597	-0.0211	0.1559	0.1035	0.0323	0.0030557	0.0030557	0.5623	459.
	-14.45	12.27	0.2502	0.087252	0.004999	-0.000659	0.004881	0.003254	0.001012	0.0011048	0.0011048	0.7030	11.0
8	-9.00	5.25	28.82	2555.	-77.	-27.	1907.	1696.	254.	118.7	663.3	68.0	
1	4.39	0.2307	93.64	2.9668	-0.2256	-0.0245	0.1697	0.1217	0.0305	0.0032758	0.0032758	0.5893	481.
	-14.25	12.75	0.2383	0.064224	0.004904	-0.000695	0.004819	0.003455	0.000676	0.0009401	0.0009401	0.7297	11.0
9	-9.0	5.25	28.79	1995.	26.	-22.	1675.	1380.	334.	75.5	665.4	70.0	
1	2.62	0.2298	93.78	2.3121	-0.1060	-0.0184	0.1452	0.0919	0.0380	0.0028982	0.0028982	0.5368	439.

	-14.25	11.53	0.2615	0.075033	0.003623	-0.000628	0.005100	0.003140	0.001300	0.0013011	0.0013011	0.6771	11.0
10	-9.[illegible]	5.25	28.68	1715.	78.	-17.	1452.	1196.	371.	61.5	572.3	70.0	
1	1.29	0.2255	93.59	1.9518	-0.0448	-0.0112	0.1259	0.0771	0.0418	0.0026506	0.0026506	0.5084	415.
	-14.25	10.29	0.2760	0.075867	-0.001705	-0.000426	0.004949	0.002936	0.001594	0.0016128	0.0016128	0.6475	11.0
11	-9.00	5.25	28.77	1430.	129.	-8.	1345.	1027.	472.	44.4	536.4	70.0	
1	-[illegible].52	0.2255	93.74	1.6506	0.0149	-0.0017	0.1200	0.0621	0.0505	0.0023243	0.0023243	0.4787	389.
	-14.25	6.87	0.2949	0.071795	-0.000650	-0.000072	0.005218	0.002701	0.002156	0.0020407	0.0020407	0.6159	11.0
12	-9.00	5.25	28.77	2250.	-23.	-25.	1917.	1498.	328.	95.9	638.5	71.0	
1	3.56	0.2294	93.93	2.6135	-0.1624	-0.0216	0.1709	0.1041	0.0376	0.0029828	0.0029828	0.5656	463.
	-14.25	12.62	0.2481	0.081356	-0.004995	-0.000665	0.005258	0.003203	0.001156	0.0010350	0.0010350	0.7059	11.0
13	-7.[illegible]	5.25	28.91	2565.	46.	-38.	1897.	1477.	332.	92.2	635.7	71.0	
1	1.64	0.2294	94.16	2.9653	-0.0852	-0.0259	0.1683	0.0989	0.0406	0.0029070	0.0029070	0.5632	461.
	-12.25	11.1[illegible]	0.2497	0.092597	-0.002657	-0.000533	0.005249	0.003085	0.001273	0.0013095	0.0013095	0.7038	11.0
14	-5.[illegible]	5.25	28.89	2655.	146.	-49.	1953.	1430.	455.	87.9	638.5	72.0	
1	-[illegible].52	0.2295	94.11	3.3121	0.0303	-0.0403	0.1735	0.0939	0.0572	0.0027399	0.0027399	0.5651	463.
	-13.25	9.[illegible]4	0.2488	0.102507	-0.000937	-0.001247	0.005368	0.002905	0.001772	0.0018243	0.0018243	0.7057	11.0
15	-11.[illegible]	5.25	28.94	1925.	-54.	-10.	1935.	1443.	356.	95.7	635.7	72.0	
1	5.21	0.2290	94.19	2.2193	-0.1945	-0.0205	0.1715	0.1052	0.0346	0.0030240	0.0030240	0.5626	461.
	-16.25	12.98	0.2511	0.069396	-0.006081	-0.000640	0.005363	0.003291	0.001083	0.0009795	0.0009795	0.7033	11.0
16	-3.[illegible]	4.91	28.79	2341.	248.	-73.	1066.	595.	324.	54.0	638.5	73.0	
1	-3.16	0.2286	94.34	2.7208	0.1501	-0.0715	0.0569	0.0569	0.0428	0.0016869	0.0016869	0.5845	463.
	-7.91	7.61	0.2466	0.084082	-0.004638	-0.002229	0.002995	0.001759	0.001323	0.0020665	0.0020665	0.7049	~~11.0~~ 8.0
17	-3.[illegible]	4.91	28.82	2640.	232.	-81.	1286.	1103.	281.	66.8	668.8	73.0	
1	-2.45	0.2266	94.38	3.0702	0.1311	-0.0811	0.1145	0.0665	0.0389	0.0018141	0.0018141	0.5914	485.
	-7.91	7.93	0.2374	0.086542	-0.003696	-0.002285	0.003227	0.001874	0.001056	0.0018335	0.0018335	0.7318	~~11.0~~ 8.0
18	-3.[illegible]	4.90	28.91	2165.	263.	-71.	1051.	944.	144.	48.4	608.1	74.0	
1	-3.80	0.2261	94.33	2.5052	0.1666	-0.0702	0.0567	0.0526	0.0244	0.0017517	0.0017517	0.5372	441.
	-7.91	7.14	0.2618	0.085853	-0.005708	-0.002405	0.003313	0.001802	0.000906	0.0024804	0.0024804	0.6779	~~11.0~~ 8.0
19	-3.[illegible]	4.75	28.75	1865.	278.	-64.	918.	826.	214.	35.5	575.0	74.0	
1	-4.9[illegible]	0.2281	94.25	2.1571	0.1858	-0.0605	0.0819	0.0417	0.0331	0.0015213	0.0015213	0.5080	417.
	-7.75	6.72	0.2761	0.082575	-0.007278	-0.002305	0.003121	0.001590	0.001263	0.0028035	0.0028035	0.6402	~~11.0~~ 8.0
20	-3.[illegible]	4.85	28.96	1625.	299.	-61.	955.	762.	215.	29.3	541.9	74.0	
1	-6.35	0.2281	94.41	1.8711	0.2381	-0.0589	0.0850	0.0365	0.0329	0.0015001	0.0015001	0.4787	393.
	-7.85	5.85	0.2940	0.080878	-0.008996	-0.002547	0.003673	0.001577	0.001423	0.0035399	0.0035399	0.6198	~~11.0~~ 8.0
21	-3.[illegible]	4.90	28.56	2377.	249.	-74.	1167.	1009.	135.	56.7	638.5	74.0	
1	-3.13	0.2251	94.41	2.7402	0.1498	-0.0741	0.1034	0.0584	0.0258	0.0017735	0.0017735	0.5640	463.
	-7.91	7.5[illegible]	0.2496	0.085338	-0.004665	-0.002308	0.003220	0.001818	0.000803	0.0021440	0.0021440	0.7048	~~11.0~~ 8.0
22	-3.[illegible]	5.3[illegible]	41.11	2225.	424.	-59.	1538.	1124.	332.	90.6	638.5	75.0	

1	-6.73	.2264	112.91	1.7923	0.2116	-0.1324	0.0585	0.0652	0.0191	0.0028569	0.0028569	0.5635	463.
	-8.31	4.32	.2965	0.079847	-0.009425	-0.005857	0.002608	0.002905	0.000850	0.0050892	0.0050892	0.7317	8.0
23	-3..	5.5.	41.16	1680.	429.	-92.	357.	1104.	355.	85.0	641.2	77.0	
1	[illegible]	.2255	113.19	1.3593	.2152	-0.1265	0.0247	0.0639	0.0207	0.0027819	0.0027819	0.5649	465.
	-8.50	3.26	.2979	0.060330	-0.009554	-0.005616	0.001098	0.002834	0.000920	0.0052960	0.0052960	0.7382	6.0
24	-3...	5.50	41.20	2470.	435.	-95.	1365.	1168.	438.	93.9	638.5	78.0	
1	-6.25	.2251	113.36	2.1054	0.2197	-0.1289	0.0852	0.0678	0.0256	0.0029797	0.0029797	0.5619	463.
	-8.50	4.67	0.2997	0.090053	-0.009867	-0.005788	0.003827	0.003044	0.001151	0.0052007	0.0052007	0.7303	9.0
25	-3...	5.5.	41.2.	2755.	452.	-90.	1925.	1223.	566.	98.6	641.2	79.0	
1	-5.96	.2247	113.47	2.2391	0.2337	-0.1248	0.1159	0.0712	0.0332	0.0030941	0.0030941	0.5638	465.
	-8.50	4.94	.2987	.099865	-0.010423	-0.005566	0.005247	0.003176	0.001481	0.0052988	0.0052988	0.7322	10.0
26	-3...	5.3.	41.13	2231.	427.	-96.	1054.	1133.	295.	91.9	641.2	79.0	
1	-6.73	.2247	113.37	1.8113	0.2138	-0.1259	0.0657	0.0657	0.0168	0.0028826	0.0028826	0.5638	465.
	-8.30	4.33	.2984	.080668	-0.009520	-0.005762	0.002926	0.002926	0.000747	0.0051302	0.0051302	0.7321	~~9.0~~ 8.0
27	-3...	5.3.	41.25	2510.	416.	-105.	1157.	1225.	321.	103.2	674.3	80.0	
1	-5.72	0.2242	113.64	2.1359	0.2038	-0.1370	0.0719	0.0700	0.0163	0.0027879	0.0027879	0.5924	489.
	-8.30	4.79	0.2844	0.082357	-0.008243	-0.005542	0.002910	0.002831	0.000741	0.0044838	0.0044838	0.7609	~~9.0~~ 9.0
28	-3...	5.30	41.11	1925.	445.	-85.	1288.	1039.	365.	79.4	610.9	80.0	
1	-8.42	.2243	113.44	1.5458	0.2283	-0.1241	0.0679	0.0599	0.0211	0.0028839	0.0028839	0.5366	443.
	-8.30	3.81	.3134	.075925	-0.011239	-0.006098	0.003335	0.002942	0.001037	0.0059063	0.0059063	0.7048	~~9.0~~ 8.0
29	-3...	5.3.	41.25	225..	429.	-1...	1125.	1113.	359.	90.6	646.8	82.0	
1	-6.71	.2234	113.85	1.8229	0.2144	-0.1329	0.0707	0.0643	0.0206	0.0027862	0.0027862	0.5671	469.
	-8.30	4.39	.2971	0.081464	-0.009464	-0.005866	0.003088	0.002838	0.000911	0.0050054	0.0050054	0.7356	~~9.0~~ 9.0
40	[illegible]	-15.05	1.13	0.	1.	-3.	-13.	33.	2.	3.2	688.1	82.0	0.0
1	[illegible]	.2279	[illegible]	[illegible]	0.0169	-0.0845	-0.0338	0.0859	0.0062	0.0000796	0.0000796	0.6034	499.
	-15.05	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.000006	0.0000796	0.0000796	0.6034	~~9.0~~ 0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	C	FL-	RL-	CF	CR	C	OMEGA	PCM
TOTAL COUNTS..	0.	502.	11459.	11574.	15203.	3308.	3135.	9200.	9199.	1.500	811.	4946
TOTAL PHYS. UNITS..	0.0	25.1	57295.0	57870.0	15202.5	8268.8	7847.5	9200.0	9198.5	0.037	1408.	

T = 3 CP = CG.

RCTCR SCALE CATA * PRCGRAM LA3530 * WINC AXES

06/21/68
TIME 788.73

AMES RESEARCH CENTER * RCTOR SCALE CATA

TEST 316.0 RUN 9

CONFIG. FRBVH

LCF HELICOPTER SKEWER TARE TAIL ON

WIND AXES CCEFFICIENTS, BASEC CN RCTCR BLACE AREA AND ROTOR TIP SPEEC

PT.	THETA	ALPHA SHAFT	ALPHA CONTRCL	CLR	CXR	CYR	CPX	CMY	CPZ	CP	CPC	V/CR	F(1.0)(90)
1.	11.0	0.0	-1.2	0.029771	-0.009904	-0.001920	0.000818	0.000668	0.001156	0.0011561	0.0035314	0.249	0.707
2.	11.0	-9.0	-14.2	0.081436	0.005653	-0.002697	0.001114	0.005067	0.003250	0.0030354	0.0010467	0.250	0.705
3.	11.0	-9.0	-14.2	0.081492	0.005120	0.003889	0.001694	0.004857	0.003433	0.0031258	0.0011419	0.250	0.704
4.	11.0	-9.0	-14.2	0.078855	0.005318	0.002111	0.002721	0.004340	0.003662	0.0031916	0.0011889	0.250	0.704
5.	11.0	-9.0	-14.2	0.081923	0.004914	-0.002109	0.000[illegible]	0.005361	0.003041	0.0029567	0.0009983	0.250	0.703
6.	11.0	-9.0	-14.2	0.083746	0.004692	-0.003705	-0.000236	0.006003	0.002848	0.0028494	0.0009137	0.250	0.703
7.	11.0	-9.0	-14.4	0.081252	0.004999	-0.003659	0.001012	0.004881	0.003254	0.0030557	0.0011048	0.250	0.703
8.	11.0	-9.0	-14.2	0.084224	0.006434	-0.000695	0.000876	0.004819	0.003455	0.0032758	0.0009401	0.238	0.730
9.	11.0	-9.2	-14.2	0.079033	0.003623	-0.000628	0.001300	0.005100	0.003140	0.0028982	0.0013011	0.261	0.677
10.	11.0	-9.0	-14.2	0.075867	0.001735	-0.000426	0.001394	0.004949	0.002936	0.0026506	0.0016128	0.276	0.648
11.	11.0	-9.0	-14.2	0.071795	-0.000365	-0.000172	0.002196	0.005218	0.002731	0.0023243	0.0020407	0.295	0.616
12.	11.0	-9.0	-14.2	0.08[illegible]356	0.004995	-0.000665	0.001158	0.005258	0.003203	0.0025828	0.0010350	0.248	0.706
13.	11.0	-7.0	-12.2	0.092597	0.002657	-0.000933	0.001273	0.005245	0.003385	0.0029070	0.0013095	0.250	0.704
14.	11.0	-5.7	-10.2	0.102507	-0.000937	-0.001247	0.001772	0.005368	0.002905	0.0027399	0.0018243	0.249	0.706
15.	11.0	-11.0	-16.2	0.069196	0.006081	-0.000643	0.001083	0.005363	0.003291	0.0030240	0.0009795	0.250	0.703
16.	8.0 ~~11.0~~	-3.0	-7.9	0.084082	-0.004638	-0.002209	0.001323	0.002955	0.001759	0.0016865	0.0020665	0.249	0.705
17.	8.0 ~~11.0~~	-3.0	-7.9	0.086542	-0.003696	-0.002285	0.001096	0.003227	0.001874	0.0018141	0.0018335	0.237	0.732
18.	8.0 ~~11.0~~	-3.0	-7.9	0.085853	-0.005738	-0.002405	0.000936	0.003313	0.001802	0.0017517	0.0024804	0.262	0.678
19.	8.0 ~~11.0~~	-3.0	-7.7	0.082575	-0.007073	-0.002345	0.001263	0.003121	0.001590	0.0015213	0.0028035	0.276	0.648
20.	8.0 ~~11.0~~	-3.0	-7.8	0.078878	-0.008996	-0.002547	0.001423	0.003673	0.001577	0.0015001	0.0035359	0.294	0.620
21.	8.0 ~~11.0~~	-3.0	-7.9	0.085338	-0.004665	-0.002308	0.000823	0.003220	0.001818	0.0017735	0.0021440	0.250	0.705
22.	8.0	-3.0	-8.3	0.079847	-0.009425	-0.005897	0.000859	0.002608	0.002905	0.0028569	0.0050892	0.298	0.732
23.	6.0	-3.0	-8.5	0.060330	-0.009554	-0.005616	0.000920	0.001098	0.002834	0.0027819	0.0052960	0.298	0.733
24.	9.0	-3.0	-8.5	0.090053	-0.009867	-0.005788	0.001151	0.003827	0.003044	0.0029797	0.0052007	0.300	0.730
25.	10.0	-3.0	-8.5	0.095369	-0.011421	-0.005564	0.001481	0.005347	0.003176	0.0030941	0.0052988	0.299	0.732
26.	8.0 ~~9.0~~	-3.0	-8.3	0.081668	-0.009527	-0.005782	0.000747	0.002926	0.002926	0.0028826	0.0051302	0.298	0.732
27.	8.0 ~~9.0~~	-3.0	-8.3	0.082357	-0.008243	-0.005542	0.000741	0.002910	0.002831	0.0027875	0.0044838	0.284	0.761
28.	8.0 ~~9.0~~	-3.0	-8.3	0.075925	-0.011239	-0.006098	0.001037	0.003335	0.002942	0.0028839	0.0059063	0.313	0.705
29.	8.0 ~~9.0~~	-3.0	-8.3	0.087464	-0.009464	-0.005866	0.000911	0.003068	0.002838	0.0027862	0.0050054	0.297	0.736
40.	0.0 ~~4.0~~	0.0	-15.0	-0.000[illegible]	-0.000016	-0.000078	0.000006	-0.000031	0.000080	0.0000796	0.0000796	0.000	0.603

ROTOR SCALE DATA * PROGRAM LA353C * WING AXES 06/21/68
UPDATE = 6 17 68 1500 TIME 786.73

TEST 316. RUN 1[illegible] STATIC 2
STATIC NO. CHANGES FROM 2 TO 3 ON PT 59. LAST STATIC NO ENCOUNTERED IS THE ONE ACTUALLY USED.
(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WON'T HELP.)
SOME OF THESE ZEROES DISAGREE BY MORE THAN 25 COUNTS.

	FL+	RL+	C	Q	FL-	RL-	CF	CR	POWER
END	11458.	11574.	15204.	13.	3331.	3116.	9281.	9196.	494.
BEGINNING	11458.	11574.	15202.	0.	3296.	3150.	9260.	9198.	494.

(ZEROES AVERAGED ANYWAY.)

BAROMETRIC PRESSURE = 29.95

CONFIG. ERBVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*1.0 L/D,E	C V,KTS V/CR	LIFT,L CL CLR	DRAG,U CC CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CPZ	ROLL,U CROLL CPX	HP CF CPO	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1	-3.[illegible]	5.45	41.16	2315.	424.	-94.	85.	1143.	327.	92.8	642.6	82.0	
1	-6.36	0.2235	113.70	1.8972	0.2116	-0.1282	0.0533	0.0663	0.0187	0.0029076	0.0029076	0.5635	466.
	-6.45	4.54	0.2986	0.094536	-0.009433	-0.005715	0.002362	0.002955	0.000836	0.0050730	0.0050730	0.7317	8.0
2	-3.[illegible]	5.55	41.36	2260.	419.	-105.	877.	1100.	215.	89.9	645.4	86.0	
1	-6.46	0.2219	113.98	1.8397	0.2083	-0.1407	0.0548	0.0638	0.0118	0.0028019	0.0028019	0.5638	468.
	-8.55	4.51	0.2981	0.081741	-0.009254	-0.006251	0.002435	0.002833	0.000523	0.0049510	0.0049510	0.7319	8.0
3	-3.[illegible]	4.[illegible]	41.23	2470.	473.	-112.	1795.	869.	326.	68.9	645.4	86.0	
1	-7.14	0.2219	114.22	2.[illegible]43	0.2511	-0.1411	0.1117	0.0492	0.0186	0.0021466	0.0021466	0.5638	468.
	-7.[illegible]	4.97	0.2587	0.089422	-0.011202	-0.006297	0.004983	0.002193	0.000831	0.0047647	0.0047647	0.7322	8.0
4	-3.[illegible]	5.30	41.25	2265.	424.	-96.	978.	1096.	253.	85.4	645.4	87.0	
1	-6.55	0.2214	114.35	1.8352	0.2107	-0.1256	0.0607	0.0632	0.0141	0.0027911	0.0027911	0.5633	468.
	-8.3[illegible]	4.5[illegible]	0.2991	0.082076	-0.009424	-0.005797	0.002716	0.002828	0.000630	0.0049969	0.0049969	0.7318	8.0
5	-3.[illegible]	4.[illegible]	41.18	2395.	465.	-95.	1582.	888.	438.	70.0	645.4	87.0	
1	-7.19	0.2215	114.25	1.9451	0.2451	-0.1289	0.0985	0.0554	0.0256	0.0021858	0.0021858	0.5633	468.
	-7.[illegible]	4.86	0.2988	0.086836	-0.010937	-0.005757	0.004398	0.002249	0.001145	0.0047675	0.0047675	0.7316	8.0
6	-3.0[illegible]	2.70	41.13	2596.	534.	-87.	2283.	683.	481.	51.6	645.4	87.0	
1	-6.14	0.2215	114.19	2.1116	0.3021	-0.1225	0.1424	0.0377	0.0284	0.0016114	0.0016114	0.5633	468.
	-5.7[illegible]	5.[illegible]7	0.2586	0.094161	-0.013472	-0.005461	0.006348	0.001680	0.001264	0.0048270	0.0048270	0.7315	8.0
7	-3.[illegible]	6.85	41.23	2[illegible]55.	278.	-59.	328.	1231.	248.	110.4	645.4	88.0	
1	-5.94	0.2210	114.43	1.6642	0.1732	-0.1321	0.0204	0.0779	0.0137	0.0034515	0.0034515	0.5628	468.
	-9.85	3.99	0.2993	0.074520	-0.007757	-0.005917	0.000913	0.003489	0.000616	0.0052681	0.0052681	0.7312	8.0
8	-3.00	7.30	41.25	1995.	371.	-105.	-19.	1363.	279.	113.0	645.4	88.0	
1	-5.92	0.2210	114.46	1.6141	0.1673	-0.1370	-0.0012	0.0798	0.0157	0.0035348	0.0035348	0.5628	468.
	-10.39	3.88	0.2993	0.072318	-0.007496	-0.006138	-0.000054	0.003576	0.000702	0.0053035	0.0053035	0.7312	8.0
9	-3.[illegible]	5.55	41.16	2245.	416.	-92.	1063.	1091.	491.	88.3	645.4	88.0	
1	-6.42	0.2211	114.33	1.8231	0.2050	-0.1265	0.0663	0.0631	0.0234	0.0027616	0.0027616	0.5628	468.

		-8.55	4.55	0.2990	0.081491	-0.009163	-0.005656	0.002962	0.002820	0.001344	0.0048972	0.0048972	0.7310	8.0
10		-3.[illegible]	5.55	41.18	2165.	403.	-36.	598.	1195.	660.	96.3	645.4	89.0	
	1	-6.31	0.2206	114.46	1.7564	0.1941	-0.0805	0.0368	0.0695	0.0355	0.0030162	0.0030162	0.5623	468.
		-8.55	4.32	0.2994	0.073699	-0.008098	-0.003605	0.001648	0.003113	0.001768	0.0050572	0.0050572	0.7306	8.0
11		-3.00	5.55	41.27	2090.	392.	14.	616.	1270.	1145.	100.7	645.4	89.0	
	1	-6.22	0.2206	114.60	1.6905	0.1843	-0.0404	0.0383	0.0740	0.0655	0.0031540	0.0031540	0.5623	468.
		-8.55	4.17	0.2997	0.075943	-0.008278	-0.001813	0.001719	0.003322	0.003122	0.0051115	0.0051115	0.7308	8.0
12		-3.0[illegible]	5.55	41.13	2295.	426.	-143.	1029.	1043.	-73.	86.2	645.4	89.0	
	1	-6.53	0.2217	114.40	1.8652	0.2134	-0.1665	0.0642	0.0601	-0.0062	0.0027017	0.0027017	0.5623	468.
		-8.55	4.62	0.2992	0.083478	-0.009551	-0.007540	0.002873	0.002691	-0.000279	0.0049257	0.0049257	0.7305	8.0
13		-3.[illegible]	5.55	41.18	2305.	432.	-203.	1173.	545.	-564.	79.8	645.4	89.0	
	1	-6.65	0.2207	114.33	1.8756	0.2188	-0.2179	0.0733	0.0541	-0.0365	0.0024996	0.0024996	0.5623	468.
		-8.55	4.74	0.2993	0.083645	-0.009779	-0.009742	0.003275	0.002417	-0.001650	0.0047842	0.0047842	0.7304	8.0
14		-3.[illegible]	5.55	41.13	222[illegible].	42[illegible].	-93.	923.	1080.	301.	87.8	645.4	89.0	
	1	-6.59	0.2207	114.4[illegible]	1.8[illegible]36	0.2385	-0.1274	0.0570	0.0624	0.0171	0.0027508	0.0027508	0.5623	468.
		-6.55	4.48	0.2992	0.08[illegible]721	-0.009231	-0.005702	0.002577	0.002795	0.000766	0.0049499	0.0049499	0.7305	8.0
15		-[illegible]	6.00	41.39	2485.	482.	-59.	813.	1156.	269.	102.1	648.1	90.0	
	1	-7.30	0.2202	114.87	2.0111	0.2576	-0.1387	0.0504	0.0710	0.0139	0.0031655	0.0031655	0.5[illegible]41	470.
		-7.0[illegible]	4.18	0.2991	0.089983	-0.011526	-0.006204	0.002253	0.003177	0.000624	0.0058773	0.0058773	0.7329	8.0
16		-[illegible]	4.95	41.27	189[illegible].	368.	-75.	1122.	1083.	419.	83.6	645.4	[illegible]0.0	
	1	-6.17	0.2202	114.70	1.5252	0.1650	-0.1064	0.0697	0.0666	0.0240	0.0026236	0.0026236	0.5617	468.
		-9.95	4.37	0.300[illegible]	0.068625	-0.007424	-0.004879	0.003137	0.002728	0.001079	0.0044236	0.0044236	0.7303	8.0
17		-7.0[illegible]	4.6[illegible]	41.25	1550.	341.	-42.	1314.	1031.	522.	77.9	645.4	90.0	
	1	-6.6[illegible]	0.2202	114.67	1.2463	0.1445	-0.0837	0.0817	0.0583	0.0285	0.0024435	0.0024435	0.5617	468.
		-11.60	3.95	0.2999	0.056046	-0.006499	-0.003763	0.003674	0.002619	0.001283	0.0041078	0.0041078	0.7302	8.0
18		-9.[illegible]	5.75	41.27	1995.	189.	-35.	185[illegible].	1522.	549.	124.4	645.4	90.0	
	1	-7.80	0.2202	114.70	1.6953	0.0225	-0.0864	0.1150	0.0921	0.0268	0.0039050	0.0039050	0.5617	468.
		-14.75	5.44	0.3003	0.072413	-0.001015	-0.003886	0.005173	0.004145	0.001208	0.0037339	0.0037339	0.7303	11.0
19		-9.0[illegible]	7.15	41.53	2435.	102.	-44.	2704.	1560.	532.	163.1	645.4	90.0	
	1	1.44	0.2202	115.[illegible]7	1.557[illegible]	-0.0493	-1.0535	0.1670	0.1165	0.0256	0.0051198	0.0051198	0.5617	468.
		-16.15	6.4[illegible]	0.3005	0.086617	0.002233	-0.004232	0.007563	0.005367	0.001159	0.0037381	0.0037381	0.7308	13.0
20		-9.00	7.20	41.13	243[illegible].	108.	-40.	2155.	1566.	427.	159.9	645.4	90.0	
	1	1.26	0.2203	114.50	1.9723	-0.0434	-0.0906	0.1344	0.1164	0.0194	0.0050184	0.0050184	0.5617	468.
		-16.20	6.37	0.2995	0.086430	0.001945	-0.004061	0.006026	0.005218	0.000868	0.0037256	0.0037256	0.7308	13.0
21		-9.0[illegible]	5.17	40.97	1760.	230.	-35.	1916.	1285.	544.	103.6	645.4	90.0	
	1	-2.31	0.2203	114.27	1.4278	0.0577	-0.0824	0.1199	0.0779	0.0268	0.0032506	0.0032506	0.5617	468.
		-14.1[illegible]	4.56	0.2988	0.063756	-0.002574	-0.003681	0.005356	0.003481	0.001197	0.0036499	0.0036499	0.7296	10.0
22		-9.	4.[illegible]	40.78	1275.	322.	-36.	1731.	951.	575.	73.7	645.4	90.0	

1	-7.44	0.2203	114.00	1.0327	0.1348	-0.0875	0.1089	0.0873	0.0289	0.0023138	0.0023138	0.5617	468.
	-13.[illegible]	3.44	0.2981	0.045899	-0.005992	-0.003868	0.004843	0.002546	0.001286	0.0039081	0.0039081	0.7292	8.0
23	-9.[illegible]	5.7[illegible]	41.25	2135.	196.	-44.	1753.	1497.	490.	123.5	648.1	91.0	
1	-0.99	0.2198	114.77	1.6430	0.0284	-0.0937	0.1090	0.0906	0.0232	0.0038339	0.0038339	0.5636	470.
	-14.70	5.48	0.2589	0.073389	-0.001268	-0.004187	0.004869	0.004044	0.001036	0.0037227	0.0037227	0.7321	11.0
24	-9.[illegible]	5.70	41.34	2155.	174.	-37.	1655.	1549.	475.	131.6	664.7	91.0	
1	-0.33	0.2198	114.51	1.7373	0.0103	-0.0879	0.1213	0.0936	0.0222	0.0037885	0.0037885	0.5780	482.
	-14.7[illegible]	5.83	0.2918	0.073955	-0.000426	-0.003743	0.005164	0.003985	0.000944	0.0034028	0.0034028	0.7407	11.0
25	-9.[illegible]	5.55	41.2[illegible]	1945.	205.	-29.	1839.	1462.	566.	115.7	637.1	91.0	
1	-1.31	0.2198	114.71	1.5711	0.0360	-0.0815	0.1145	0.0873	0.0276	0.0037812	0.0037812	0.5540	462.
	-14.55	5.41	0.3039	0.072545	-0.001661	-0.003763	0.005286	0.004030	0.001274	0.0038148	0.0038148	0.7224	11.0
26	-9.[illegible]	5.55	41.30	1805.	238.	-38.	1763.	1319.	544.	102.5	620.5	91.0	
1	-2.46	0.2198	114.84	1.4525	0.0625	-0.0888	0.1058	0.0794	0.0265	0.0036246	0.0036246	0.53[illegible]7	450.
	-14.55	5.[illegible]	0.3124	0.067879	-0.003051	-0.004232	0.005162	0.003874	0.001291	0.0041400	0.0041400	0.7082	11.0
27	-9.[illegible]	5.55	41.[illegible]6	165[illegible].	259.	-38.	1831.	1221.	586.	91.6	606.8	91.0	
1	-3.48	0.2199	114.50	1.3340	0.0810	-0.0850	0.1144	0.0738	0.0293	0.0034651	0.0034651	0.5277	440.
	-14.55	4.73	0.3185	0.067668	-0.004111	-0.004514	0.005803	0.003744	0.001487	0.0043835	0.0043835	0.6957	11.0
28	-9.[illegible]	5.75	41.27	2110.	193.	-38.	1797.	1489.	501.	122.7	648.1	91.0	
1	-0.91	0.2198	114.81	1.6216	0.0258	-0.0888	0.1117	0.0901	0.0239	0.0038092	0.0038092	0.5636	470.
	-14.75	5.49	0.2991	0.072474	-0.001154	-0.003969	0.004992	0.004026	0.001067	0.0036764	0.0036764	0.7321	11.0
29	-9.[illegible]	4.30	41.27	2220.	233.	-39.	2604.	1308.	697.	103.9	648.1	91.0	
1	-1.87	0.2198	114.81	1.7535	0.0586	-0.0856	0.1618	0.0788	0.0360	0.0032261	0.0032261	0.5636	470.
	-13.[illegible]	6.26	0.2990	0.080157	-0.002617	-0.004056	0.007233	0.003521	0.001609	0.0034241	0.0034241	0.7321	11.0
30	-9.[illegible]	2.35	41.23	2395.	294.	-37.	3481.	1159.	771.	89.7	648.1	91.0	
1	-3.21	0.2198	114.74	1.5390	0.1088	-0.0880	0.2166	0.0656	0.0407	0.0027660	0.0027860	0.5636	470.
	-11.35	6.33	0.2988	0.086559	-0.004857	-0.003930	0.009669	0.003108	0.001816	0.0035552	0.0035552	0.7321	11.0
31	-9.[illegible]	6.[illegible]0	41.25	1550.	193.	-43.	1586.	1508.	548.	123.7	648.1	91.0	
1	-3.94	0.2198	114.77	1.5734	0.0259	-0.0529	0.3986	0.0913	0.0268	0.0038387	0.0038387	0.5636	470.
	-15.00	5.29	0.2989	0.070279	-0.001158	-0.004151	0.004405	0.004076	0.001198	0.0037354	0.0037354	0.7321	11.0
32	-9.[illegible]	5.75	41.2[illegible]	1965.	194.	-47.	1772.	1452.	469.	123.4	648.1	91.0	
1	-3.97	0.2198	114.71	1.5875	0.0269	-0.0525	0.1133	0.0904	0.0219	0.0038297	0.0038297	0.5636	470.
	-14.75	5.32	0.2987	0.070828	-0.001202	-0.004026	0.004923	0.004032	0.000979	0.0037320	0.0037320	0.7320	11.0
33	-9.[illegible]	5.75	41.18	1930.	196.	-9.	1543.	1540.	752.	123.8	648.1	91.0	
1	-1.05	0.2198	114.67	1.3598	0.0287	-0.0451	0.0561	0.0934	0.0396	0.0038384	0.0038384	0.5636	470.
	-14.75	5.18	0.2986	0.069548	-0.001279	-0.002903	0.004286	0.004164	0.001764	0.0037798	0.0037798	0.7320	11.0
34	-9.[illegible]	5.75	41.13	2205.	197.	-70.	1941.	1475.	287.	124.8	648.1	91.0	
1	-1.35	0.2199	114.6[illegible]	1.6232	0.0297	-0.1152	0.1211	0.0858	0.0106	0.0038744	0.0038744	0.5636	470.
	-14.75	5.32	0.2985	0.072291	-0.001323	-0.005131	0.005391	0.003658	0.000473	0.0037931	0.0037931	0.7319	11.0

35	-9.0?	5.75	41.18	2030.	293.	-107.	1978.	1390.	120.	819.2	648.1	91.0	
1	-1.2?	0.2198	114.67	1.6416	0.0344	-0.1455	0.1232	0.0841	0.0002	0.0037015	0.0037015	0.5636	470.
	-14.75	5.53	0.2986	0.073206	-0.001536	-0.006488	0.005494	0.003749	0.000009	0.0036719	0.0036719	0.7320	11.0
36	-9.??	5.75	41.23	2?70.	230.	-138.	2304.	1317.	-285.	118.6	648.1	91.0	
1	-1.69	0.2198	114.74	1.6727	0.0318	-0.1708	0.1434	0.0795	-0.0253	0.0034811	0.0034811	0.5636	470.
	-14.75	5.72	0.2988	0.074669	-0.001418	-0.007625	0.006401	0.003548	-0.001129	0.0035972	0.0035972	0.7321	11.0
37	-9.??	5.75	41.11	1983.	194.	-39.	1665.	1478.	443.	122.6	648.1	91.0	
1	-3.98	0.2199	114.57	1.6636	0.0274	-0.0898	0.1039	0.0898	0.0204	0.0038044	0.0038044	0.5636	470.
	-14.75	5.38	0.2984	0.071377	-0.001217	-0.003996	0.004625	0.003995	0.000906	0.0037032	0.0037032	0.7318	11.0
38	-7.??	5.75	41.11	2373.	251.	-45.	1879.	1437.	474.	114.8	648.1	91.0	
1	-2.13	0.2199	114.57	1.9246	0.0716	-0.0863	0.1173	0.0838	0.0257	0.0035628	0.0035628	0.5636	470.
	-12.75	5.92	0.2984	0.085667	-0.003187	-0.003842	0.005219	0.003730	0.001142	0.0038445	0.0038445	0.7318	11.0
39	-5.??	5.75	41.33	2743.	342.	-51.	2188.	1347.	590.	106.1	648.1	91.0	
1	-3.73	0.2198	114.84	2.2197	0.1435	-0.0888	0.1359	0.0776	0.0346	0.0032938	0.0032938	0.5636	470.
	-10.75	5.9?	0.2991	0.099262	-0.006419	-0.003970	0.006077	0.003442	0.001547	0.0043174	0.0043174	0.7322	11.0
40	-11.??	5.75	41.34	1585.	177.	-22.	1921.	1373.	587.	118.7	648.1	91.0	
1	-?.78	0.2199	114.47	1.2814	0.0174	-0.0504	0.1201	0.0892	0.0246	0.0036837	0.0036837	0.5636	470.
	-16.75	4.57	0.2981	0.056936	-0.000773	-0.004017	0.005335	0.003965	0.001093	0.0036184	0.0036184	0.7317	11.0
41	-9.??	5.55	41.41	1995.	231.	-38.	1854.	1392.	374.	115.8	648.1	91.0	
1	-1.13	0.2198	115.01	1.6037	0.0317	-0.0687	0.1148	0.0837	0.0159	0.0035965	0.0035965	0.5636	470.
	-14.55	5.63	0.2995	0.071926	-0.001424	-0.003978	0.005150	0.003754	0.000713	0.0035531	0.0035531	0.7324	11.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	C	FL-	RL-	CF	CR	C	OMEGA	POW
TOTAL COUNTS..	0.	501.	11458.	11574.	15203.	3314.	3133.	9201.	9197.	4.500	811.	4941
TOTAL PHYS. UNITS..	0.0	25.0	57290.0	57870.0	15203.0	8283.8	7832.5	9200.5	9197.0	0.162	1409.	

T = 3 CP = CC.

A-15

RCTOR SCALE CATA * PROGRAM LA3530 * WIND AXES 06/21/69

TAPE 788673

AMES RESEARCH CENTER * RCTOR SCALE CATA

TEST 316.0 RUN 10

CONFIG. FRBVH

LOH HELICOPTER SKEWER TARE TAIL ON

WINC AXES CCEFFICIENTS, BASED CN RCTOR BLACE AREA ANC ROTOR TIP SPEEC

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CRZ	CP	CPU	VAOR	M(1.0)(90)
1.	8.0	-3.0	-8.4	0.084565	-0.009433	-0.005715	0.000836	0.002362	0.002955	0.0029076	0.0050730	0.299	0.732
2.	8.0	-3.0	-8.5	0.081741	-0.009254	-0.006251	0.000523	0.002435	0.002833	0.0028015	0.0049510	0.298	0.732
3.	8.0	-3.2	-7.0	0.089423	-0.011202	-0.006297	0.000831	0.004983	0.002193	0.0021466	0.0047647	0.299	0.732
4.	8.0	-3.0	-8.3	0.082076	-0.009424	-0.005757	0.000630	0.002716	0.002828	0.0027911	0.0045969	0.299	0.732
5.	8.0	-3.0	-7.0	0.086636	-0.010937	-0.005757	0.001145	0.004398	0.002249	0.0021858	0.0047675	0.299	0.732
6.	8.0	-3.2	-5.7	0.094161	-0.013472	-0.005461	0.001264	0.006348	0.001680	0.0016114	0.0048270	0.299	0.732
7.	8.0	-3.0	-9.8	0.074527	-0.007757	-0.005917	0.000616	0.000913	0.003489	0.0034515	0.0052681	0.299	0.731
8.	8.0	-3.2	-10.3	0.072318	-0.007496	-0.006138	0.000703	-0.000954	0.003575	0.0035348	0.0053035	0.299	0.731
9.	8.0	-3.0	-8.5	0.081491	-0.009163	-0.005656	0.001044	0.002962	0.002820	0.0027636	0.0048972	0.299	0.731
10.	8.0	-3.0	-8.5	0.078699	-0.008658	-0.003609	0.001768	0.001648	0.003113	0.0030162	0.0050572	0.299	0.731
11.	8.0	-3.0	-8.5	0.075943	-0.008278	-0.001813	0.003122	0.001719	0.003322	0.0031540	0.0051115	0.300	0.731
12.	8.0	-3.0	-8.5	0.083476	-0.009551	-0.007540	-0.000279	0.002873	0.002691	0.0027017	0.0049253	0.299	0.730
13.	8.0	-3.0	-8.5	0.083845	-0.009779	-0.009742	-0.001650	0.003275	0.002417	0.0024596	0.0047642	0.299	0.730
14.	8.0	-3.0	-8.5	0.080721	-0.009331	-0.005702	0.000766	0.002517	0.002795	0.0027568	0.0049499	0.299	0.730
15.	8.0	-1.0	-7.0	0.089983	-0.011526	-0.006276	0.000624	0.002253	0.003177	0.0031655	0.0058773	0.299	0.733
16.	8.0	-5.0	-9.9	0.068625	-0.007424	-0.004879	0.001079	0.003137	0.002728	0.0026236	0.0044236	0.300	0.730
17.	8.0	-7.0	-11.6	0.056346	-0.006499	-0.003763	0.001283	0.003674	0.002619	0.0024435	0.0041078	0.300	0.730
18.	11.0	-9.0	-14.7	0.072410	-0.001015	-0.003886	0.001208	0.005173	0.004145	0.0035050	0.0037339	0.300	0.730
19.	13.0	-9.0	-16.1	0.088617	0.002233	-0.004232	0.001159	0.007563	0.005387	0.0051198	0.0037381	0.301	0.731
20.	13.0	-9.0	-16.2	0.088436	0.001945	-0.004061	0.000868	0.006026	0.005218	0.0050184	0.0037256	0.299	0.730
21.	10.0	-9.0	-14.1	0.063756	-0.002574	-0.003681	0.001197	0.005356	0.003481	0.0032506	0.0036499	0.299	0.730
22.	6.0	-9.0	-13.0	0.045655	-0.005992	-0.003888	0.001286	0.004846	0.002546	0.0023138	0.0039081	0.298	0.729
23.	11.0	-9.0	-14.7	0.073339	-0.001268	-0.004187	0.001136	0.004869	0.004046	0.0038339	0.0037227	0.299	0.732
24.	11.0	-9.0	-14.7	0.073955	-0.001426	-0.003743	0.000944	0.005164	0.003985	0.0037885	0.0034028	0.292	0.747
25.	11.0	-9.0	-14.5	0.072545	-0.001661	-0.003763	0.001274	0.005286	0.004030	0.0037812	0.0038148	0.304	0.722
26.	11.0	-9.0	-14.5	0.070879	-0.003051	-0.004332	0.001291	0.005162	0.003874	0.0036246	0.0041400	0.312	0.708
27.	11.0	-9.0	-14.5	0.067668	-0.004111	-0.004514	0.001487	0.005803	0.003744	0.0034651	0.0043835	0.319	0.696
28.	11.0	-9.0	-14.7	0.072474	-0.001154	-0.003969	0.001067	0.004952	0.004026	0.0038092	0.0036764	0.299	0.732
29.	11.0	-9.0	-13.0	0.060157	-0.002617	-0.004006	0.001609	0.007233	0.003521	0.0032261	0.0034241	0.299	0.732
30.	11.0	-9.0	-11.3	0.066559	-0.004857	-0.003930	0.001816	0.009669	0.003108	0.0027860	0.0035552	0.299	0.732
31.	11.0	-9.0	-15.0	0.073279	-0.001158	-0.004151	0.001198	0.004405	0.004076	0.0038387	0.0037354	0.299	0.732
32.	11.0	-9.0	-14.7	0.070826	-0.001292	-0.004038	0.000979	0.004923	0.004032	0.0038297	0.0037320	0.299	0.732
33.	11.0	-9.0	-14.7	0.065548	-0.001279	-0.002963	0.001764	0.004286	0.004166	0.0038384	0.0037798	0.299	0.732
34.	11.0	-9.0	-14.7	0.072291	-0.001323	-0.005131	0.000473	0.005351	0.003998	0.0038744	0.0037531	0.298	0.732
35.	11.0	-9.0	-14.7	0.073206	-0.001535	-0.006488	0.000009	0.005494	0.003749	0.0037015	0.0036719	0.299	0.732
36.	11.0	-9.0	-14.7	0.074665	-0.001416	-0.007625	-0.001129	0.006401	0.003548	0.0036611	0.0035972	0.299	0.732
37.	11.0	-9.0	-14.7	0.071377	-0.001217	-0.003996	0.000906	0.004625	0.003995	0.0038044	0.0037032	0.298	0.732
38.	11.0	-7.0	-12.7	0.085667	-0.003167	-0.003840	0.001142	0.005219	0.002730	0.0035626	0.0038445	0.298	0.732
39.	11.0	-5.0	-13.7	0.099262	-0.006419	-0.003973	0.001547	0.006377	0.003442	0.0032938	0.0043174	0.295	0.732
40.	11.0	-11.0	-16.7	0.056936	-0.000773	-0.004017	0.001093	0.005335	0.003965	0.0036837	0.0036184	0.298	0.732
41.	11.0	-9.0	-14.5	0.071926	-0.001424	-0.003978	0.000713	0.005150	0.003754	0.0035965	0.0035531	0.299	0.732

RCTCR SCALE DATA * PRCGRAM LA3530 * WING AXES 06/21/68

UPDATE = 6 17 68 1500 TIME 788.73

TEST 316.[illegible] RUN 11 STATIC 2
STATIC NC. CHANGES FRCM 2 TO 3 CN PT 100. LAST STATIC AC ENCCUNTEREC IS THE CNE ACTUALLY USEC.
(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLEC WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WCN'T HELP.)

BAROMETRIC PRESSURE = 29.88

CONFIG. FRBVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	C V,KTS V/CR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CPY	YAW,U CN CMZ	ROLL,U CRCLL CMX	HP CP CPC	OMEGA*R CC CCC	TEMP M,OMR M,AT	NOTES RPM THETA
1	-8.30	6.22	55.85	1723.	450.	-66.	1599.	1547.	775.	67.7	645.4	78.0	
1	-7.36	0.2230	132.53	1.1256	0.1250	-0.0408	0.0735	0.0417	0.0439	0.0020984	0.0020984	0.5680	468.
	-14.51	4.58	0.3466	0.060647	-0.007537	-0.002448	0.004415	0.002505	0.002636	0.0044116	0.0044116	0.7648	11.0
2	-8.30	6.22	55.75	2163.	426.	-75.	2176.	1659.	612.	80.7	642.6	78.0	
1	-5.19	0.2231	132.47	1.2196	0.1107	-0.0361	0.0923	0.0489	0.0455	0.0025324	0.0025324	0.5656	466.
	-14.51	5.44	0.3475	0.073826	-0.006712	-0.002338	0.005587	0.002961	0.002757	0.0044384	0.0044384	0.7623	12.0
3	-8.30	6.20	55.89	2358.	423.	-55.	3000.	1802.	1110.	84.8	642.6	79.0	
1	-4.44	0.2226	132.77	1.3916	0.1081	-0.0273	0.1277	0.0530	0.0593	0.0026674	0.0026674	0.5650	466.
	-14.57	6.13	0.3487	0.084611	-0.006571	-0.001657	0.008372	0.003222	0.003608	0.0044003	0.0044003	0.7621	13.0
4	-8.33	6.2[illegible]	55.66	13[illegible]3.	492.	-74.	1262.	1393.	702.	55.9	642.6	79.0	
1	-1[illegible].63	0.2226	132.49	0.[illegible]36.	0.1513	-0.0363	0.0565	0.0353	0.0403	0.0017592	0.0017592	0.5650	466.
	-14.5[illegible]	3.57	0.348[illegible]	0.048799	-0.0[illegible]9162	-0.002319	0.003539	0.002134	0.002442	0.0047614	0.0047614	0.7616	10.0
5	-8.30	6.22	55.55	753.	551.	-72.	692.	552.	733.	17.7	642.6	79.0	
1	-26.56	0.2227	132.34	0.4247	0.2123	-0.0361	0.0278	0.0154	0.0417	0.0005558	0.0005558	0.5650	466.
	-14.51	1.79	0.3476	0.025655	-0.012828	-0.002300	0.001679	0.000929	0.002517	0.0049632	0.0049632	0.7614	8.0
6	-8.3[illegible]	6.2[illegible]	55.75	1713.	454.	-75.	1672.	1529.	612.	65.7	642.6	79.0	
1	-7.24	0.2226	132.6[illegible]	1.[illegible]45	0.1277	-0.0361	0.0769	0.0411	0.0455	0.0020660	0.0020660	0.5650	466.
	-14.52	4.56	0.3483	0.062918	-0.007744	-0.002312	0.004664	0.002491	0.002762	0.0044731	0.0044731	0.7618	11.0
7	-8.30	6.20	55.75	1893.	423.	-77.	1842.	1628.	781.	76.5	656.4	79.0	
1	-5.59	0.2226	132.63	1.1136	0.1089	-0.0353	0.0847	0.0457	0.0441	0.0022568	0.0022568	0.5772	476.
	-14.57	5.14	0.3479	0.064725	-0.006333	-0.002286	0.004926	0.002654	0.002562	0.0040808	0.0040808	0.7739	11.0
8	-8.35	6.20	54.71	1583.	4[illegible].	-76.	1805.	1664.	754.	85.6	670.2	79.0	
1	-4.84	0.2227	131.31	1.1922	0.1310	-0.0475	0.0846	0.0520	0.0417	0.0024836	0.0024836	0.5893	486.
	-14.52	5.16	0.3307	0.065189	-0.005525	-0.002596	0.004627	0.002843	0.002281	0.0039613	0.0039613	0.7842	11.0
9	-8.30	6.20	55.68	1558.	476.	-77.	1613.	1409.	823.	54.6	631.6	79.0	
1	-8.82	0.2226	132.51	0.9118	0.1415	-0.0399	0.0743	0.0359	0.0459	0.0018102	0.0018102	0.5553	458.
	-14.53	4.17	0.3541	0.057173	-0.008871	-0.002514	0.004659	0.002250	0.002881	0.0047005	0.0047005	0.7520	11.0
10	-8.30	6.22	55.73	1423.	499.	-73.	1652.	1331.	633.	48.2	609.5	79.0	
1	-10.6[illegible]	0.2226	132.57	0.8292	0.1551	-0.0371	0.0767	0.0321	0.0373	0.0017771	0.0017771	0.5359	442.

	-14.50	3.72	0.3671	0.055870	-0.010452	-0.002501	0.005122	0.002162	0.002510	0.0053827	0.0053827	0.7327	11.0
11	-8.30	6.20	55.78	1658.	467.	-78.	1509.	1471.	765.	60.8	639.9	81.0	
1	-7.94	0.2218	132.87	0.9727	0.1354	-0.0357	0.0694	0.0383	0.0434	0.0019453	0.0019453	0.5616	464.
	-14.50	4.45	0.3515	0.059625	-0.008318	-0.002441	0.004262	0.002355	0.002664	0.0045847	0.0045847	0.7584	11.0
12	-8.30	7.45	55.83	1473.	459.	-78.	854.	1569.	680.	70.3	639.9	81.0	
1	-8.64	0.2218	132.90	0.8583	0.1304	-0.0395	0.0393	0.0427	0.0398	0.0022467	0.0022467	0.5616	464.
	-15.75	3.75	0.3516	0.052743	-0.008014	-0.002430	0.002413	0.002625	0.002428	0.0048404	0.0048404	0.7584	11.0
13	-8.30	8.85	55.75	1248.	464.	-75.	410.	1626.	517.	77.7	639.9	81.0	
1	-10.48	0.2218	132.84	0.7227	0.1338	-0.0381	0.0189	0.0456	0.0319	0.0024848	0.0024848	0.5616	464.
	-17.15	2.98	0.3514	0.044373	-0.008212	-0.002341	0.001158	0.002797	0.001960	0.0052095	0.0052095	0.7583	11.0
14	-8.30	4.45	55.71	1948.	492.	-78.	2726.	1325.	976.	45.9	639.9	81.0	
1	-7.50	0.2218	132.78	1.1479	0.1510	-0.0403	0.1255	0.0319	0.0530	0.0014671	0.0014671	0.5616	464.
	-12.75	5.33	0.3513	0.071418	-0.009265	-0.002475	0.007699	0.001957	0.003253	0.0043271	0.0043271	0.7583	11.0
15	-8.30	3.[illegible]	55.62	2133.	533.	-62.	3471.	1208.	935.	36.9	639.9	81.0	
1	-7.96	0.2218	132.67	1.2624	0.1766	-0.0314	0.1601	0.0269	0.0510	0.0011796	0.0011796	0.5616	464.
	-11.30	5.52	0.35[illegible]	0.077306	-0.010812	-0.001924	0.009805	0.001648	0.003126	0.0044991	0.0044991	0.7581	11.0
16	-8.30	6.30	55.80	1633.	463.	-81.	1579.	1560.	675.	65.6	639.9	81.0	
1	-7.92	0.2218	132.90	0.9552	0.1328	-0.0414	0.0726	0.0423	0.0393	0.0022250	0.0022250	0.5616	464.
	-14.60	4.14	0.3516	0.059693	-0.008163	-0.002542	0.004461	0.002600	0.002412	0.0048194	0.0048194	0.7584	11.0
17	-8.30	6.30	55.85	1628.	459.	-33.	1454.	1600.	1186.	66.1	642.6	81.0	
1	-7.78	0.2218	133.01	0.9534	0.1298	-0.0115	0.0667	0.0437	0.0628	0.0020867	0.0020867	0.5640	466.
	-14.60	4.27	0.3494	0.057999	-0.007923	-0.000705	0.004072	0.002668	0.003835	0.0045928	0.0045928	0.7610	11.0
18	-8.30	6.30	55.73	1583.	456.	17.	1214.	1686.	1518.	70.6	642.6	82.0	
1	-7.93	0.2214	132.94	0.9262	0.1291	0.0174	0.0559	0.0484	0.0780	0.0022339	0.0022339	0.5635	466.
	-14.60	4.56	0.3492	0.056455	-0.007866	0.001063	0.003407	0.002951	0.004754	0.0047322	0.0047322	0.7602	11.0
19	-8.30	6.30	55.78	1743.	453.	-125.	1804.	1443.	265.	64.9	642.6	82.0	
1	-7.08	0.2214	132.95	1.0222	0.1269	-0.0682	0.0829	0.0370	0.0206	0.0020533	0.0020533	0.5635	466.
	-14.60	4.69	0.3493	0.062364	-0.007744	-0.004161	0.005060	0.002258	0.001256	0.0044556	0.0044556	0.7603	11.0
20	-8.30	6.30	55.68	1808.	455.	-170.	1872.	1363.	-152.	64.0	642.6	82.0	
1	-6.50	0.2214	132.48	1.0635	0.1287	-0.0964	0.0863	0.0337	0.0010	0.0020245	0.0020245	0.5635	466.
	-14.60	4.86	0.3493	0.064772	-0.007841	-0.005868	0.005256	0.002055	0.000063	0.0044341	0.0044341	0.7601	11.0
21	-8.30	6.05	55.71	1713.	456.	-73.	1779.	1526.	844.	65.4	642.6	82.0	
1	-7.32	0.2214	132.91	1.0054	0.1292	-0.0373	0.0819	0.0412	0.0470	0.0020690	0.0020690	0.5635	466.
	-14.35	4.55	0.3491	0.061263	-0.007872	-0.002273	0.004991	0.002508	0.002861	0.0045246	0.0045246	0.7602	11.0
22	-6.[illegible]	6.05	55.80	2148.	534.	-78.	1748.	1471.	849.	58.2	642.6	82.0	
1	-6.98	0.2214	133.02	1.2679	0.1552	-0.0329	0.0824	0.0356	0.0504	0.0018394	0.0018394	0.5635	466.
	-12.[illegible]	5.36	0.3494	0.077388	-0.009474	-0.002007	0.004905	0.002173	0.003077	0.0046833	0.0046833	0.7603	11.0
23	-3.8[illegible]	6.[illegible]	55.73	2593.	599.	-64.	2053.	1503.	836.	66.4	642.6	82.0	

1	-7.84	0.2214	132.96	1.5406	0.2122	-0.0382	0.0945	0.0379	0.0510	0.0021008	0.0021008	0.5635	466.
	-9.8[illegible]	5.[illegible]4	0.3492	0.093947	-0.012940	-0.002329	0.005761	0.002312	0.003112	0.0059324	0.0059324	0.7602	11.0
24	-8.3[illegible]	6.05	55.89	1659.	463.	-75.	1720.	1529.	655.	64.1	642.6	82.0	
1	-7.63	0.2214	133.13	0.5867	0.1322	-0.0369	0.0789	0.0405	0.0476	0.0020269	0.0020269	0.5635	466.
	-14.35	4.45	0.3497	0.060323	-0.080086	-0.002258	0.004826	0.002473	0.002913	0.0045713	0.0045713	0.7600	11.0
25	-2.60	6.10	55.89	2013.	623.	-135.	875.	1333.	490.	57.1	642.6	82.0	
1	-10.76	0.2214	133.13	1.1873	0.2257	-0.0717	0.0401	0.0312	0.0351	0.0018056	0.0018056	0.5635	466.
	-8.70	3.89	0.3497	0.072591	-0.013797	-0.004382	0.002454	0.001905	0.002146	0.0062204	0.0062204	0.7605	8.0
26	-2.60	6.10	55.85	2619.	643.	-124.	2053.	1605.	535.	63.6	642.6	82.0	
1	-8.71	0.2214	133.08	1.5543	0.2381	-0.0654	0.0943	0.0347	0.0373	0.0020122	0.0020122	0.5635	466.
	-8.70	4.75	0.3495	0.094951	-0.014548	-0.003998	0.005760	0.002118	0.002276	0.0063955	0.0063955	0.7604	10.0
27	-2.60	6.15	55.85	2313.	638.	-130.	1057.	1339.	465.	58.0	642.6	82.0	
1	-9.74	0.2214	133.06	1.3698	0.2351	-0.0691	0.0485	0.0316	0.0348	0.0018343	0.0018343	0.5635	466.
	-8.65	4.22	0.3495	0.083689	-0.014363	-0.004220	0.002962	0.001933	0.002127	0.0063097	0.0063097	0.7606	9.0
28	-2.60	6.10	55.71	1998.	629.	-133.	664.	1330.	355.	58.6	642.6	82.0	
1	-11.05	0.2214	132.91	1.1825	0.2308	-0.0722	0.0306	0.0318	0.0305	0.0018538	0.0018538	0.5635	466.
	-8.73	3.78	0.3491	0.072348	-0.014064	-0.004397	0.001862	0.001940	0.001857	0.0063590	0.0063590	0.7602	8.0
29	-3.00	8.50	55.85	2073.	533.	-138.	-65.	1812.	316.	98.6	642.6	83.0	
1	-7.97	0.2210	133.26	1.2231	0.1712	-0.0723	-0.0030	0.0525	0.0272	0.0031229	0.0031229	0.5629	466.
	-11.93	3.96	0.3500	0.074916	-0.010486	-0.004467	-0.000183	0.003214	0.001665	0.0063571	0.0063571	0.7600	10.0
30	-3.00	8.20	55.80	2198.	551.	-137.	275.	1725.	416.	91.1	642.6	83.0	
1	-8.03	0.2210	133.14	1.3309	0.1628	-0.0722	0.0126	0.0489	0.0317	0.0028869	0.0028869	0.5629	466.
	-11.22	4.19	0.3497	0.079549	-0.011176	-0.004415	0.000772	0.002992	0.001936	0.0063029	0.0063029	0.7598	10.0
31	-3.00	7.35	55.71	2293.	574.	-136.	697.	1614.	432.	81.9	642.6	83.0	
1	-8.25	0.2210	133.03	1.3619	0.1974	-0.0725	0.0321	0.0443	0.0323	0.0025948	0.0025948	0.5629	466.
	-1[illegible].35	4.36	0.3494	0.083272	-0.012050	-0.004423	0.001959	0.002702	0.001969	0.0062679	0.0062679	0.7596	10.0
32	-3.00	6.60	55.76	2423.	616.	-130.	1432.	1510.	528.	71.7	642.6	83.0	
1	-8.51	0.2210	133.12	1.4378	0.2150	-0.0682	0.0659	0.0391	0.0368	0.0022706	0.0022706	0.5629	466.
	-9.60	4.56	0.3496	0.087880	-0.013143	-0.004167	0.004025	0.002392	0.002247	0.0062652	0.0062652	0.7596	10.0
33	-3.00	5.75	55.75	2578.	647.	-126.	2019.	1358.	561.	58.2	642.6	83.0	
1	-8.95	0.2210	133.09	1.5324	0.2413	-0.0660	0.0929	0.0323	0.0397	0.0018426	0.0018426	0.5629	466.
	-8.75	4.75	0.3496	0.093620	-0.014741	-0.004031	0.005676	0.001972	0.002423	0.0063134	0.0063134	0.7597	10.0
34	-3.00	4.65	55.71	2768.	739.	-134.	2603.	1197.	602.	43.3	642.6	83.0	
1	-9.61	0.2210	133.03	1.6489	0.2793	-0.0712	0.1199	0.0251	0.0493	0.0013705	0.0013705	0.5629	466.
	-7.65	4.85	0.3494	0.100656	-0.017047	-0.004349	0.007316	0.001530	0.003009	0.0065383	0.0065383	0.7594	10.0
35	-3.00	7.30	55.67	2323.	577.	-126.	884.	1627.	465.	81.6	642.6	83.0	
1	-8.19	0.2210	133.23	1.3748	0.1983	-0.0649	0.0406	0.0441	0.0340	0.0025869	0.0025869	0.5629	466.
	-1[illegible].3	4.41	0.3499	0.084173	-0.012121	-0.003974	0.002484	0.002699	0.002081	0.0062777	0.0062777	0.7599	10.0

36	-3.00	7.30	55.78	2603.	588.	-124.	1367.	1673.	665.	85.5	642.6	84.0	466.
1	-7.56	0.2236	133.24	1.5468	0.2053	-0.0645	0.0629	0.0466	0.0431	0.0027140	0.0027140	0.5824	11.0
	-11.39	4.76	0.3500	0.094718	-0.012574	-0.003952	0.003851	0.002856	0.002639	0.0064171	0.0064171	0.7592	
37	-3.00	7.30	55.75	1988.	577.	-130.	450.	1558.	443.	76.9	645.4	84.0	468.
1	-9.61	0.2206	133.21	1.1749	0.1989	-0.0664	0.0207	0.0415	0.0328	0.0024091	0.0024091	0.5648	9.0
	-11.33	3.83	0.3484	0.071297	-0.012069	-0.004151	0.001257	0.002517	0.001993	0.0062165	0.0062165	0.7616	
38	-3.00	7.30	55.80	1698.	588.	-118.	45.	1471.	465.	68.6	645.4	84.0	468.
1	-11.61	0.2206	133.27	0.9982	0.2052	-0.0607	0.0021	0.0372	0.0339	0.0021509	0.0021509	0.5648	8.8
	-10.31	3.31	0.3485	0.061630	-0.012461	-0.003687	0.000127	0.002262	0.002061	0.0062072	0.0062072	0.7617	
39	-3.00	7.50	55.75	2313.	574.	-137.	661.	1628.	416.	83.2	645.4	84.0	468.
1	-8.17	0.2206	133.21	1.3718	0.1970	-0.0726	0.0304	0.0447	0.0316	0.0026064	0.0026064	0.5648	10.0
	-10.53	4.38	0.3484	0.083248	-0.011956	-0.004408	0.001845	0.002711	0.001917	0.0062313	0.0062313	0.7616	
40	-3.00	7.50	55.68	2223.	561.	-80.	366.	1766.	817.	94.1	645.4	84.0	468.
1	-8.19	0.2206	133.12	1.3193	0.1897	-0.0387	0.0169	0.0514	0.0500	0.0029499	0.0029499	0.5648	10.0
	-10.50	4.10	0.3482	0.079942	-0.011497	-0.002345	0.001022	0.003113	0.003025	0.0064533	0.0064533	0.7615	
41	-3.00	7.50	55.82	2148.	552.	-32.	175.	1855.	1286.	98.8	645.4	84.0	468.
1	-8.21	0.2206	133.29	1.2731	0.1832	-0.0064	0.0082	0.0548	0.0717	0.0030957	0.0030957	0.5648	10.0
	-10.50	3.95	0.3486	0.077176	-0.011132	-0.000513	0.000499	0.003328	0.004356	0.0065116	0.0065116	0.7617	
42	-3.00	7.50	55.87	2378.	587.	-153.	921.	1549.	-96.	77.4	642.6	84.0	466.
1	-8.24	0.2206	133.35	1.4081	0.2140	-0.1754	0.0423	0.0435	0.0083	0.0024558	0.0024558	0.5624	10.0
	-10.50	4.31	0.3503	0.086368	-0.012514	-0.006467	0.002594	0.002486	0.000506	0.0062597	0.0062597	0.7594	
43	-3.00	7.50	55.64	2418.	584.	-256.	928.	1466.	-466.	73.5	642.6	84.0	466.
1	-8.07	0.2206	133.37	1.4386	0.2043	-0.1460	0.0428	0.0378	-0.0092	0.0023323	0.0023323	0.5626	10.0
	-10.50	4.68	0.3495	0.087564	-0.012460	-0.008915	0.002612	0.002306	-0.000564	0.0060863	0.0060863	0.7590	
44	-3.00	7.45	55.68	2318.	569.	-132.	704.	1634.	496.	83.5	642.6	84.0	466.
1	-8.04	0.2206	133.12	1.3767	0.1945	-0.0722	0.0324	0.0453	0.0352	0.0026506	0.0026506	0.5624	10.0
	-10.45	4.42	0.3497	0.084153	-0.011892	-0.004294	0.001981	0.002767	0.002150	0.0062579	0.0062579	0.7591	

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	C	OMEGA	PGh
TOTAL COUNTS..	0.	501.	11461.	11573.	15208.	2313.	3135.	9201.	9197.	13.000	511.	494.
TOTAL PHYS. UNITS..	0.0	25.0	57305.0	57862.5	15208.0	6282.5	7836.3	9200.5	9196.5	0.325	1489.	

T = 3 CP = CG.

ROTOR SCALE DATA + PROGRAM LA3530 A WING AXES — 06/21/68 — TIME 788.73

AMES RESEARCH CENTER + ROTOR SCALE DATA

TEST 316.1 RUN 11

CONFIG. FRBVH

LOH HELICOPTER SKEWER TARE TAIL ON

WING AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/CR	M(1.0)(90)
1.	11.0	-8.3	-14.5	0.06[illegible]647	-0.007597	-0.002448	0.002636	0.004415	0.002505	0.0020984	0.0044116	0.347	0.765
2.	12.0	-8.3	-14.5	0.073826	-0.006702	-0.002308	0.002757	0.005587	0.002961	0.0025324	0.0044384	0.348	0.762
3.	13.0	-8.3	-14.5	0.084611	-0.006571	-0.001657	0.003608	0.008372	0.003222	0.0026674	0.0044503	0.349	0.762
4.	10.0	-8.3	-14.5	0.048795	-0.009162	-0.002315	0.002442	0.003539	0.002134	0.0017592	0.0047614	0.348	0.762
5.	8.0	-8.3	-14.5	0.025659	-0.012828	-0.002300	0.002517	0.001679	0.000929	0.0005558	0.0049632	0.348	0.761
6.	11.0	-8.3	-14.5	0.067918	-0.007744	-0.002312	0.002762	0.004664	0.002491	0.0020660	0.0044731	0.348	0.762
7.	11.0	-8.3	-14.5	0.064725	-0.006330	-0.002286	0.002562	0.004926	0.002654	0.0022568	0.0040808	0.341	0.774
8.	11.0	-8.3	-14.5	0.065185	-0.005525	-0.002596	0.002281	0.004627	0.002843	0.0024836	0.0039613	0.331	0.784
9.	11.0	-8.3	-14.5	0.057173	-0.008871	-0.002504	0.002881	0.004659	0.002250	0.0018102	0.0047305	0.354	0.752
10.	11.0	-8.3	-14.5	0.055876	-0.010452	-0.002501	0.002519	0.005122	0.002162	0.0017771	0.0053827	0.367	0.733
11.	11.0	-8.3	-14.5	0.059625	-0.008318	-0.002441	0.002664	0.004262	0.002355	0.0019453	0.0045847	0.350	0.758
12.	11.0	-8.3	-15.7	0.052740	-0.008314	-0.002432	0.002428	0.002413	0.002625	0.0022467	0.0048404	0.351	0.758
13.	11.0	-8.3	-17.1	0.044373	-0.008212	-0.002341	0.001960	0.001158	0.002797	0.0024848	0.0052095	0.350	0.758
14.	11.0	-8.3	-12.7	0.07[illegible]418	-0.009265	-0.002475	0.003253	0.007659	0.001957	0.0014671	0.0043271	0.350	0.758
15.	11.0	-8.3	-11.3	0.077376	-0.010812	-0.001924	0.003126	0.009805	0.001648	0.0011796	0.0044591	0.350	0.758
16.	11.0	-8.3	-14.6	0.058693	-0.008163	-0.002542	0.002412	0.004461	0.002600	0.0022250	0.0048194	0.351	0.758
17.	11.0	-8.3	-14.6	0.057999	-0.007923	-0.002705	0.003835	0.004072	0.002668	0.0020867	0.0045928	0.349	0.761
18.	11.0	-8.3	-14.6	0.056455	-0.007866	0.001063	0.004759	0.003407	0.002951	0.0022335	0.0047322	0.349	0.760
19.	11.0	-8.3	-14.6	0.062364	-0.007744	-0.004161	0.001256	0.005060	0.002258	0.0020533	0.0044556	0.349	0.760
20.	11.0	-8.3	-14.6	0.064712	-0.007841	-0.005065	0.000163	0.005256	0.002055	0.0020245	0.0044341	0.349	0.760
21	11.0	-8.3	-14.3	0.061260	-0.007872	-0.002273	0.002861	0.004951	0.002508	0.0020690	0.0045246	0.349	0.760
22.	11.0	-6.0	-12.[illegible]	0.077388	-0.009474	-0.002707	0.003077	0.004905	0.002173	0.0018394	0.0046833	0.349	0.760
23.	11.0	-3.8	-9.8	0.053947	-0.012943	-0.002329	0.003112	0.005761	0.002312	0.0021608	0.0059324	0.349	0.760
24.	11.0	-8.3	-14.3	0.06[illegible]323	-0.006286	-0.002256	0.002913	0.004826	0.002473	0.0020265	0.0045113	0.350	0.760
25.	8.0	-2.6	-8.7	0.072591	-0.013797	-0.004382	0.002146	0.002454	0.001905	0.0018056	0.0062204	0.350	0.760
26.	10.0	-2.6	-8.7	0.094955	-0.014548	-0.003998	0.002276	0.005760	0.002118	0.0020122	0.0063955	0.350	0.760
27.	9.0	-2.6	-8.6	0.083680	-0.014363	-0.004220	0.002127	0.002965	0.001933	0.0018343	0.0063857	0.350	0.760
28.	8.0	-2.6	-8.7	0.072948	-0.014064	-0.004397	0.001857	0.001862	0.001940	0.0018538	0.0062590	0.349	0.760
29.	10.0	-3.0	-11.9	0.074916	-0.010486	-0.004407	0.001665	-0.000183	0.003214	0.0031225	0.0063571	0.350	0.760
30.	10.0	-3.0	-11.2	0.079549	-0.011176	-0.004415	0.001536	0.000772	0.002992	0.0028665	0.0063029	0.350	0.760
31.	10.0	-3.0	-10.3	0.083372	-0.012050	-0.004423	0.001969	0.001959	0.002702	0.0025948	0.0062679	0.349	0.760
32.	10.0	-3.0	-9.6	0.087880	-0.013143	-0.004167	0.002247	0.004025	0.002392	0.0022766	0.0062652	0.350	0.760
33.	10.0	-3.0	-8.7	0.093623	-0.014741	-0.004030	0.002423	0.005676	0.001972	0.0018426	0.0063134	0.350	0.760
34.	10.0	-3.0	-7.6	0.10[illegible]656	-0.017347	-0.004349	0.003009	0.007316	0.001530	0.0013705	0.0065383	0.345	0.760
35.	10.0	-3.0	-10.3	0.084173	-0.012121	-0.003974	0.002081	0.002484	0.002699	0.0025869	0.0062777	0.350	0.760
36.	11.0	-3.0	-10.3	0.094718	-0.012574	-0.003952	0.002639	0.003851	0.002856	0.0027[illegible]40	0.0064171	0.350	0.759
37.	9.0	-3.0	-10.3	0.071297	-0.012068	-0.004151	0.001993	0.001257	0.002517	0.0024091	0.0062165	0.348	0.762
38.	8.0	-3.0	-10.3	0.06[illegible]630	-0.012461	-0.003687	0.002061	0.000127	0.002262	0.0021509	0.0062072	0.34[illegible]	0.762
39.	10.0	-3.0	-10.5	0.083248	-0.011958	-0.004408	0.001917	0.001645	0.002711	0.0026064	0.0062313	0.348	0.762
40.	10.0	-3.0	-10.5	0.075942	-0.011497	-0.002345	0.003029	0.001022	0.002113	0.0025495	0.0064533	0.348	0.761
41.	10.0	-3.0	-10.5	0.077176	-0.011132	-0.003513	0.004356	0.003499	0.003328	0.0030957	0.0065116	0.349	0.762
42.	10.0	-3.0	-10.5	0.086368	-0.012514	-0.006467	0.000596	0.002556	0.002486	0.0024558	0.0062597	0.350	0.759
43.	10.0	-3.0	-10.5	0.087864	-0.012463	-0.008915	-0.000564	0.002612	0.002306	0.0023323	0.0060863	0.350	0.759
44.	10.0	-3.0	-10.4	0.084153	-0.011892	-0.004294	0.002150	0.001981	0.002787	0.0026506	0.0062579	0.350	0.759

TEST [illegible] RUN [illegible] STATIC [illegible] UPDATE [illegible] 17 68 1500 TIME 700.73
STATIC NO. CHANGES FROM 2 TO 3 ON PT 100. LAST STATIC NO ENCOUNTERED IS THE ONE ACTUALLY USED.
(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE R STILL = 1. LATER CHANGE TO R=9 [illegible])

BAROMETRIC PRESSURE = 30.23

CONFIG. FRBVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*10G L/D,E	C V,KTS V/CR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CPZ	ROLL,U CRCLL CPX	HP CP CPO	OMEGA*R CC CCC	TEMP M,OPR M,AT	NOTES RPM THETA
1	-3.3	5.55	55.82	1833.	637.	-125.	734.	1479.	544.	66.6	635.7	67.0	
1	-11.[illegible]	-.2289	130.86	1.1124	-.2162	-0.0637	0.0337	0.0371	0.0376	0.0021047	0.0021047	0.5853	461.
	-9.25	3.58	0.3474	0.067138	-0.013046	-0.003847	0.002835	0.002239	0.002270	0.0062843	0.0062843	0.7617	8.0
2	-3.31	5.55	55.85	2073.	632.	-126.	930.	1493.	528.	69.8	652.3	69.0	
1	-9.88	-.2286	131.38	1.2249	-.2133	-0.0646	0.0428	0.0378	0.0368	0.0020498	0.0020458	0.5789	473.
	-9.25	3.92	0.3352	0.073461	-0.012271	-0.003714	0.002460	0.002175	0.002119	0.0058136	0.0058136	0.7753	8.0
3	-3.31	5.55	55.83	2168.	637.	-125.	511.	1528.	502.	74.7	666.1	70.0	
1	-9.49	-.2276	131.23	1.2945	-.2163	-0.0640	0.0235	0.0394	0.0356	0.0020630	0.0020630	0.5906	483.
	-9.25	4.21	0.3325	0.071551	-0.011957	-0.003535	0.001297	0.002180	0.001569	0.0056197	0.0056197	0.7878	8.0
4	-3.30	7.45	55.85	2318.	579.	-126.	693.	1714.	456.	88.0	638.5	71.0	
1	-8.26	-.2271	131.33	1.3733	0.1994	-0.0658	0.0318	0.0482	0.0354	0.0027658	0.0027658	0.5656	463.
	-11.75	4.23	0.3472	0.082755	-0.012016	-0.003563	0.001919	0.002893	0.002132	0.0064007	0.0064007	0.7628	~~8.0~~ 10.0
5	-3.31	7.45	55.85	2478.	562.	-135.	1111.	1759.	554.	93.0	652.3	72.0	
1	-7.32	-.2267	131.56	1.4675	0.1884	-0.0692	0.0464	0.0497	0.0381	0.0027452	0.0027452	0.5773	473.
	-11.75	4.59	0.3414	0.085041	-0.012918	-0.004007	0.002688	0.002877	0.002210	0.0058842	0.0058842	0.7738	10.0
6	-3.30	7.45	55.92	2658.	553.	-133.	1082.	1830.	455.	102.2	668.8	73.0	
1	-6.62	-.2263	131.71	1.5756	0.1828	-0.0677	0.0456	0.0528	0.0338	0.0028038	0.0028038	0.5914	485.
	-11.75	4.62	0.3324	0.087144	-0.011298	-0.003742	0.002742	0.002916	0.001868	0.0055404	0.0055404	0.7879	10.0
7	-3.30	7.45	55.85	2218.	565.	-124.	716.	1661.	602.	80.3	624.7	74.0	
1	-8.78	-.2259	131.81	1.3134	0.2023	-0.0625	0.0328	0.0451	0.0404	0.0027097	0.0027097	0.5516	453.
	-11.75	4.15	0.3561	0.083099	-0.012829	-0.003564	0.002083	0.002862	0.002560	0.0067512	0.0067512	0.7484	10.0
8	-3.33	7.55	55.73	1963.	599.	-115.	565.	1589.	619.	72.5	602.6	74.0	
1	-11.36	-.2259	131.61	1.1599	0.2121	-0.0585	0.0262	0.0426	0.0409	0.0027269	0.0027269	0.5323	437.
	-11.8[illegible]	3.68	0.3686	0.072884	-0.014437	-0.003576	0.001778	0.002852	0.002781	0.0075794	0.0075794	0.7286	10.0
9	-3.30	7.45	55.83	2368.	576.	-122.	661.	1731.	545.	89.6	641.2	76.0	
1	-8.01	-.2255	131.54	1.4035	0.1976	-0.0621	0.0313	0.0488	0.0378	0.0028068	0.0028068	0.5654	465.
	-11.75	4.33	0.3473	0.084643	-0.011915	-0.003747	0.001888	0.002943	0.002281	0.0063839	0.0063839	0.7618	10.0
10	-1.13	7.45	55.87	2748.	665.	-125.	966.	1679.	565.	97.2	641.2	77.0	
1	-9.18	-.2246	132.17	1.6367	0.2644	-0.0775	0.0444	0.0511	0.0374	0.0030489	0.0030489	0.5449	465.
	-8.45	4.38	0.3476	0.092888	-0.015975	-0.004682	0.002682	0.003089	0.002261	0.0078370	0.0078370	0.7612	10.0
11	-5.33	7.55	55.82	1853.	509.	-121.	566.	1718.	650.	82.2	641.2	79.0	
1	-6.22	-.2238	132.34	1.0893	0.1573	-0.0583	0.0261	0.0467	0.0419	0.0025875	0.0025875	0.5638	465.
	-12.85	3.99	0.3483	0.066091	-0.009547	-0.003537	0.001585	0.002834	0.002540	0.0055719	0.0055719	0.7602	10.0
12	-6.33	7.35	55.80	1646.	502.	-116.	397.	1700.	603.	80.4	641.2	80.0	
1	-9.16	-.2234	132.43	0.9685	0.1539	-0.0563	0.0182	0.0463	0.0388	0.0025352	0.0025352	0.5633	465.
	-13.6	3.61	0.3486	0.058834	-0.009354	-0.003422	0.001109	0.002811	0.002357	0.0055275	0.0055275	0.7597	10.0
13	-3.37	7.45	55.71	2356.	575.	-120.	726.	1729.	581.	89.9	641.2	80.0	
1	-8.74	-.2234	132.32	1.4031	0.1977	-0.0618	0.0334	0.0491	0.0392	0.0028374	0.0028374	0.5633	465.
	-10.75	4.31	0.3483	0.084912	-0.011990	-0.003746	0.002026	0.002979	0.002376	0.0064504	0.0064504	0.7596	10.0

ZERO VALUES IN [illegible] ALPHA B 1 FL+ RL+ [illegible] FL- RL- CF CB [illegible] OMEGA [illegible]

[illegible]

ROTOR SCALE DATA • PROGRAM LA3530 • WIND AXES

06/21/68
TIME 788.73

AMES RESEARCH CENTER • ROTOR SCALE DATA

TEST 316.0 RUN 12

CONFIG. FRVBH

LOH HELICOPTER SKEWER TARE TAIL ON

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CPX	CPY	CPZ	CP	CPO	V/CR	M(1.0)(90)
1.	8.0	-3.3	-9.2	0.067139	-0.013046	-0.003847	0.002270	0.002035	0.002239	0.0021047	0.0062843	0.347	0.762
2.	8.0	-3.3	-9.2	0.073461	-0.012271	-0.003714	0.002119	0.002460	0.002175	0.0020498	0.0058136	0.339	0.775
3.	8.0	-3.3	-9.2	0.071550	-0.011557	-0.003535	0.001969	0.001297	0.002180	0.0020630	0.0056197	0.332	0.787
4.	10.0 ~~8.0~~	-3.3	-11.7	0.082755	-0.012016	-0.003963	0.002132	0.001919	0.002893	0.0027658	0.0064007	0.347	0.762
5.	10.0	-3.3	-11.7	0.085941	-0.013918	-0.004007	0.002210	0.002688	0.002877	0.0027452	0.0058842	0.340	0.774
6.	10.0	-3.3	-11.7	0.087044	-0.010098	-0.003742	0.001868	0.002742	0.002916	0.0028038	0.0055404	0.332	0.789
7.	10.0	-3.3	-11.7	0.083099	-0.012829	-0.003964	0.002560	0.002083	0.002862	0.0027097	0.0067512	0.356	0.748
8.	10.0	-3.3	-10.8	0.078804	-0.014407	-0.003976	0.002781	0.001778	0.002892	0.0027265	0.0075794	0.369	0.729
9.	10.0	-3.3	-11.7	0.084643	-0.011915	-0.003747	0.002281	0.001888	0.002943	0.0028068	0.0063839	0.347	0.762
10.	10.0	-1.3	-8.4	0.093888	-0.015975	-0.004682	0.002261	0.002682	0.003089	0.0030485	0.0078370	0.348	0.761
11.	10.0	-5.3	-12.3	0.066091	-0.009547	-0.003537	0.002540	0.001585	0.002824	0.0025875	0.0055719	0.348	0.760
12.	10.0	-6.3	-13.8	0.058634	-0.009354	-0.003420	0.002357	0.001109	0.002811	0.0025352	0.0055275	0.349	0.760
13.	10.0	-3.3	-11.7	0.084912	-0.011993	-0.003746	0.002376	0.002026	0.002979	0.0028374	0.0064504	0.348	0.759

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ROTOR SCALE DATA * [illegible] 1A3530 * WIND AXES 06/21/68

TEST 316.[illegible] RUN 13 STATIC 1 UPDATE = 6 17 68 1500 TIME 788.73
STATIC NO. CHANGES FROM 1 TO 3 ON PT 100. LAST STATIC NO ENCOUNTERED IS THE ONE ACTUALLY USED.
(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WON'T HELP.)
B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = 502.0, END VALUE = 501.0 COUNTS. END VALUE WILL BE USED.

BAROMETRIC PRESSURE = 30.14

CONFIG. FRBVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*1:0 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,L CN CMZ	ROLL,L CROLL CMX	HP CP CPC	OMEGA*R CC CCO	TEMP P,CHR P,AT	NOTES RPM THETA
1	-3.[illegible]	[illegible].45	28.95	2458.	236.	-63.	1071.	559.	314.	52.3	649.5	78.0	
1	-2.71	0.2272	94.58	2.8435	0.1347	-0.0612	0.0949	0.0539	0.0414	0.0015617	0.0015617	0.5716	471.
	-3.45	8.53	0.2458	0.085885	-0.004369	-0.001647	0.002867	0.001625	0.001249	0.0017455	0.0017455	0.7121	8.0
2	-3.[illegible]	4.65	28.83	2483.	237.	-65.	1080.	561.	282.	52.2	649.5	78.0	
1	-2.72	0.2272	94.38	2.3844	0.1369	-0.0624	0.0961	0.0539	0.0350	0.0015589	0.0015589	0.5716	471.
	-7.65	8.57	0.2453	0.086761	-0.004117	-0.001878	0.002889	0.001622	0.001172	0.0017339	0.0017339	0.7118	8.0
3	-3.[illegible]	4.70	28.9[illegible]	3[illegible]93.	260.	-51.	2090.	1139.	336.	68.2	649.5	79.0	
1	-2.6[illegible]	0.2268	94.59	3.5904	0.1632	-0.0467	0.1855	0.0659	0.0435	0.0020394	0.0020394	0.5711	471.
	-7.7[illegible]	8.49	0.2458	0.118468	-0.004929	-0.001411	0.005604	0.002111	0.001314	0.0019492	0.0019492	0.7115	10.0
4	-3.[illegible]	4.65	28.9[illegible]	1938.	243.	-66.	700.	677.	266.	45.0	649.5	79.0	
1	-3.66	0.2268	94.59	2.2402	0.1433	-0.0642	0.0628	0.0466	0.0373	0.0013470	0.0013470	0.5711	471.
	-7.65	7.12	0.2458	0.067675	-0.004329	-0.001941	0.001899	0.001408	0.001127	0.0019043	0.0019043	0.7115	6.0
5	-3.[illegible]	4.65	28.83	1373.	266.	-52.	245.	801.	135.	38.5	649.5	80.0	
1	-6.16	0.2264	94.56	1.5836	0.1739	-0.0484	0.0218	0.0396	0.0259	0.0011542	0.0011542	0.5706	471.
	-7.65	4.98	0.2457	0.047812	-0.005158	-0.001462	0.001658	0.001197	0.000782	0.0021687	0.0021687	0.7108	4.0
6	-3.[illegible]	4.75	28.85	2513.	234.	-60.	1104.	568.	320.	52.7	649.5	80.0	
1	-2.61	0.2263	94.63	2.9172	0.1332	-0.0568	0.0982	0.0545	0.0422	0.0015787	0.0015787	0.5706	471.
	-7.75	8.73	0.2458	0.088146	-0.004024	-0.001716	0.002967	0.001648	0.001275	0.0017082	0.0017082	0.7108	8.0
7	-3.[illegible]	6.50	28.95	2298.	180.	-68.	275.	1172.	192.	72.0	649.5	80.0	
1	-1.50	0.2263	94.76	2.6567	0.0694	-0.0670	0.0244	0.0728	0.0306	0.0021567	0.0021567	0.5706	471.
	-9.5[illegible]	7.76	0.2462	0.080544	-0.002103	-0.002031	0.000739	0.002208	0.000926	0.0019579	0.0019579	0.7111	8.0
8	-3.[illegible]	7.85	28.92	2123.	143.	-73.	-274.	1337.	113.	87.0	649.5	80.0	
1	-0.61	0.2263	94.72	2.4545	0.0263	-0.0726	-0.0243	0.0874	0.0236	0.0026063	0.0026063	0.5706	471.
	-10.85	6.88	0.2461	0.074351	-0.000796	-0.002200	-0.000736	0.002647	0.000714	0.0021915	0.0021915	0.7110	8.0
9	-3.[illegible]	3.63	28.76	2568.	275.	-59.	1445.	832.	420.	39.7	649.5	81.0	
1	-3.48	0.2259	94.53	2.9914	0.1821	-0.0547	0.1289	0.0423	0.0515	0.0011929	0.0011929	0.5700	471.
	-6.6[illegible]	8.95	0.2456	0.091254	-0.005495	-0.001651	0.003889	0.001276	0.001555	0.0016406	0.0016406	0.7101	8.0
1[illegible]	-3.[illegible]	1.6[illegible]	28.92	2763.	353.	-52.	2122.	641.	405.	23.3	649.5	81.0	

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1	-4.81	0.2259	94.87	3.2254	0.2716	-0.0461	0.1882	0.0257	0.0455	0.0007003	0.0007003	0.5780	471.
	-4.83	8.56	0.2464	0.097884	-0.008242	-0.001460	0.005712	0.000780	0.001502	0.0016729	0.0016729	0.7105	8.0
11	-3.00	4.85	29.19	2368.	239.	-55.	995.	554.	293.	51.9	641.2	81.0	
1	-2.38	0.2259	95.03	2.7251	0.1370	-0.0578	0.0877	0.0538	0.0396	0.0016178	0.0016178	0.5628	465.
	-7.85	8.21	0.2503	0.085341	-0.004291	-0.001610	0.002748	0.001684	0.001222	0.0019002	0.0019002	0.7036	8.0
12	-3.00	4.85	28.99	2313.	222.	2.	662.	1028.	785.	55.8	641.2	81.0	
1	-2.53	0.2259	94.92	2.6699	0.1180	0.0139	0.0586	0.0601	0.0828	0.0017394	0.0017394	0.5623	465.
	-7.85	8.12	0.2499	0.083336	-0.003684	0.000405	0.001829	0.001877	0.002586	0.0019037	0.0019037	0.7034	8.0
13	-3.00	4.85	28.95	2283.	205.	54.	524.	1136.	1149.	63.7	644.0	81.0	
1	-2.14	0.2259	94.84	2.6392	0.0985	0.0742	0.0464	0.0696	0.1153	0.0019619	0.0019619	0.5652	467.
	-7.85	7.76	0.2486	0.081540	-0.003044	0.002293	0.001435	0.002151	0.003562	0.0019911	0.0019911	0.7057	8.0
14	-3.00	4.85	28.99	2448.	242.	-114.	1391.	935.	-118.	52.2	646.8	81.0	
1	-2.86	0.2259	94.92	2.3272	0.1413	-0.1213	0.0965	0.0519	0.0029	0.0015862	0.0015862	0.5676	469.
	-7.85	8.35	0.2477	0.086747	-0.004336	-0.003713	0.002962	0.001593	0.000090	0.0018341	0.0018341	0.7082	8.0
15	-3.00	4.85	28.92	2473.	245.	-178.	1207.	866.	-585.	47.9	646.8	81.0	
1	-2.91	0.2259	94.82	2.8633	0.1454	-0.1953	0.1071	0.0457	-0.0386	0.0014574	0.0014574	0.5676	469.
	-7.85	8.75	0.2474	0.087638	-0.004451	-0.005977	0.003277	0.001397	-0.001182	0.0017143	0.0017143	0.7060	8.0
16	-3.00	4.75	28.99	2498.	239.	-61.	1083.	532.	304.	49.7	644.0	81.0	
1	-2.64	0.2259	94.92	2.7806	0.1378	-0.0593	0.0958	0.0517	0.0403	0.0015312	0.0015312	0.5652	467.
	-7.75	8.54	0.2488	0.086053	-0.004265	-0.001834	0.002964	0.001599	0.001246	0.0017828	0.0017828	0.7058	8.0
17	0.00	4.75	28.95	2893.	386.	-83.	1214.	886.	251.	55.5	649.5	81.0	
1	-5.31	0.2259	94.84	3.3555	0.3114	-0.1020	0.1076	0.0549	0.0372	0.0016663	0.0016663	0.5700	471.
	-4.75	6.43	0.2465	0.101917	-0.009459	-0.003098	0.003268	0.001666	0.001129	0.0028513	0.0028513	0.7105	8.0
18	-5.00	4.75	29.07	2358.	173.	-50.	1206.	555.	479.	47.4	644.0	81.0	
1	-1.47	0.2259	95.04	2.3649	0.0608	-0.0432	0.1064	0.3521	0.0551	0.0014612	0.0014612	0.5652	467.
	-9.75	9.87	0.2491	0.073371	-0.001888	-0.001339	0.003302	0.001616	0.001709	0.0013436	0.0013436	0.7060	8.0
19	-7.00	4.75	28.95	1753.	128.	-41.	769.	1030.	365.	53.7	644.0	81.0	
1	-0.31	0.2259	94.84	2.0174	0.0105	-0.0338	0.0681	0.0593	0.0439	0.0016529	0.0016529	0.5652	467.
	-11.75	9.43	0.2486	0.062328	-0.000323	-0.001043	0.002104	0.001832	0.001358	0.0013082	0.0013082	0.7057	8.0
20	-9.00	4.75	28.97	1443.	113.	-31.	983.	1018.	359.	54.9	644.0	81.0	
1	1.28	0.2259	94.88	1.6537	-0.0080	-0.0308	0.0873	0.0616	0.0396	0.0016909	0.0016909	0.5652	467.
	-13.75	8.28	0.2487	0.051134	0.000248	-0.000951	0.002691	0.001906	0.001226	0.0013433	0.0013433	0.7057	8.0
21	-9.00	5.20	29.21	2333.	-24.	-25.	1754.	1498.	413.	94.9	641.2	82.0	
1	3.49	0.2255	95.36	2.6697	-0.1626	-0.0262	0.1540	0.1242	0.0434	0.0030284	0.0030284	0.5623	465.
	-14.20	13.47	0.2510	0.084109	0.005123	-0.000826	0.004853	0.003283	0.001368	0.0009760	0.0009760	0.7034	11.0
22	-9.00	5.25	28.99	2643.	-65.	-21.	2169.	1664.	434.	110.7	644.0	82.0	
1	3.74	0.2255	95.01	3.0505	-0.1992	-0.0194	0.1919	0.1188	0.0462	0.0034153	0.0034153	0.5647	467.
	-14.2[illegible]	13.54	0.2492	0.094579	0.006175	-0.000600	0.005952	0.003685	0.001431	0.0009005	0.0009005	0.7053	12.0

23		-9.00	5.20	28.85	2223.	9.	-31.	1473.	1310.	402.	79.5	644.0	82.0	
	1	3.08	0.2255	94.77	2.3396	-0.1259	-0.0295	0.1309	0.0875	0.0438	0.0024531	0.0024531	0.5647	467.
		-14.21	13.25	0.2484	0.072177	0.003884	-0.000911	0.004039	0.002698	0.001353	0.0009179	0.0009179	0.7049	10.0
24		-9.00	5.20	28.76	1428.	130.	-28.	873.	1002.	365.	52.3	641.2	82.0	
	1	3.66	0.2255	94.62	1.6483	-0.0191	-0.0250	0.0779	0.0599	0.0410	0.0016355	0.0016355	[illegible]	465.
		-14.20	9.11	0.2495	0.051118	0.000592	-0.000776	0.002416	0.001857	0.001270	0.0012027	0.0012027	0.7023	8.0
25		-9.00	5.50	28.99	2233.	-25.	-33.	1641.	1459.	370.	93.6	644.0	82.0	
	1	3.65	0.2255	95.01	2.5728	-0.1642	-0.0333	0.1452	0.1007	0.0405	0.0028878	0.0028878	0.5647	467.
		-14.50	13.59	0.2497	0.079768	0.005091	-0.001034	0.004502	0.003122	0.001255	0.0009249	0.0009249	0.7053	11.0
26		-9.00	6.95	29.04	2768.	-47.	-42.	999.	1555.	311.	102.6	641.2	82.0	
	1	4.56	0.2255	95.49	2.3767	-0.1897	-0.0443	0.0883	0.1092	0.0351	0.0032071	0.0032071	0.5623	465.
		-15.95	12.07	0.2523	0.074446	0.005942	-0.001387	0.002765	0.003421	0.001099	0.0011175	0.0011175	0.7030	11.0
27		-9.00	6.45	29.02	2313.	-95.	-42.	523.	1726.	142.	120.3	644.0	82.0	
	1	6.06	0.2255	95.35	2.3146	-0.2457	-0.0441	0.0462	0.1243	0.0202	0.0037114	0.0037114	0.5647	467.
		-17.45	11.12	0.2491	0.071922	0.007623	-0.001367	0.001434	0.003857	0.000627	0.0012492	0.0012492	0.7053	11.0
28		-9.00	3.95	28.92	2478.	11.	-25.	2436.	1352.	370.	83.9	644.0	82.0	
	1	2.47	0.2255	94.89	2.6653	-0.1235	-0.0233	0.2161	0.0912	0.0408	0.0025881	0.0025881	0.5647	467.
		-12.95	14.73	0.2497	0.068616	0.003819	-0.000720	0.006682	0.002820	0.001262	0.0007794	0.0007794	0.7051	11.0
29		-9.00	2.40	28.92	2633.	67.	-23.	3161.	1228.	571.	70.5	646.8	82.0	
	1	1.09	0.2255	94.89	3. 464	-0.3581	-0.0219	0.2824	0.0802	0.0586	0.0021467	0.0021467	0.5671	469.
		-11.40	14.37	0.2476	0.093413	0.011761	-0.000642	0.008597	0.002458	0.001758	0.0007472	0.0007472	0.7075	11.0
30		-9.00	5.25	28.92	2378.	-26.	-30.	1772.	1492.	460.	94.9	644.0	82.0	
	1	3.55	0.2255	94.89	2.6668	-0.1655	-0.0291	0.1571	0.1036	0.0487	0.0029292	0.0029292	0.5647	467.
		-14.25	13.72	0.2467	0.082475	0.005120	-0.000900	0.004860	0.003204	0.001507	0.0009120	0.0009120	0.7051	11.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	C	FL-	RL-	CF	CR	C	OMEGA	POW
TOTAL COUNTS..	0.	501.	11459.	11574.	15202.	3311.	3134.	9200.	9195.	2.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57295.0	57867.5	15201.5	8276.3	7835.0	9200.0	9194.5	0.050	1408.	

I = 3 CP = CC.

ROTOR SCALE DATA * PROGRAM LA353C * WIND AXES

06/21/68
TIME 788.73

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316. RUN 13

CONFIG. FRBVH

LCH HELICOPTER   SKEWER TARE   TAIL ON

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CPY	CPZ	CP	CPO	V/OR	M(1.0)(90)
1.	8.0	-3.0	-3.4	0.085885	-0.004065	-0.001847	0.001245	0.002867	0.001629	0.0015617	0.0017455	0.246	0.712
2.	8.0	-3.0	-7.6	0.086761	-0.004117	-0.001878	0.001172	0.002889	0.001622	0.0015565	0.0017339	0.245	0.712
3.	12.0	-3.0	-7.7	0.126468	-0.004929	-0.001411	0.001314	0.005604	0.002111	0.0020394	0.0019492	0.246	0.711
4.	6.0	-3.0	-7.6	0.067679	-0.004329	-0.001941	0.001127	0.001895	0.001438	0.0013470	0.0019043	0.246	0.711
5.	4.0	-3.0	-7.6	0.047812	-0.005158	-0.001460	0.000782	0.000658	0.001197	0.0011542	0.0021687	0.246	0.711
6.	8.0	-3.0	-7.7	0.088146	-0.004024	-0.001716	0.001275	0.002967	0.001648	0.0015787	0.0017082	0.246	0.711
7.	8.0	-3.0	-9.5	0.081544	-0.002103	-0.002031	0.000926	0.000739	0.002208	0.0021567	0.0019579	0.246	0.711
8.	8.0	-3.0	-10.8	0.074351	-0.000796	-0.002200	0.000714	-0.000736	0.002647	0.0026063	0.0021915	0.246	0.711
9.	8.0	-3.0	-6.6	0.090254	-0.005495	-0.001651	0.001555	0.003889	0.001276	0.0011929	0.0016406	0.246	0.710
10.	8.0	-3.0	-4.8	0.097884	-0.008242	-0.001462	0.001502	0.005712	0.000780	0.0007033	0.0016729	0.246	0.710
11.	8.0	-3.0	-7.8	0.085341	-0.004291	-0.001810	0.001222	0.002746	0.001684	0.0016178	0.0019002	0.250	0.704
12.	8.0	-3.0	-7.9	0.083336	-0.003684	0.000405	0.002585	0.001829	0.001877	0.0017394	0.0019037	0.250	0.703
13.	8.0	-3.0	-7.8	0.081549	-0.003044	0.002293	0.003562	0.001435	0.002151	0.0019619	0.0019911	0.249	0.706
14.	8.0	-3.0	-7.8	0.086747	-0.004336	-0.003713	0.000090	0.002562	0.001593	0.0015862	0.0018341	0.248	0.708
15.	8.0	-3.0	-7.8	0.087638	-0.004451	-0.005977	-0.001182	0.003277	0.001357	0.0014574	0.0017143	0.247	0.708
16.	8.0	-3.0	-7.7	0.086050	-0.004265	-0.001834	0.001246	0.002964	0.001599	0.0015312	0.0017828	0.249	0.706
17.	8.0	0.0	-4.7	0.101917	-0.009459	-0.003098	0.001129	0.003268	0.001666	0.0016663	0.0028513	0.246	0.711
18.	8.0	-5.0	-9.7	0.073377	-0.001888	-0.001339	0.001709	0.003302	0.001616	0.0014612	0.0013436	0.249	0.706
19.	8.0	-7.0	-11.7	0.062328	-0.000323	-0.001143	0.001358	0.002164	0.001832	0.0016529	0.0013082	0.249	0.706
20.	8.0	-9.0	-13.7	0.051134	0.003248	-0.000951	0.001226	0.002691	0.001906	0.0016959	0.0013433	0.249	0.706
21.	11.0	-9.0	-14.2	0.084109	0.005123	-0.000826	0.001368	0.004853	0.003283	0.0030284	0.0009760	0.251	0.703
22.	12.0	-9.0	-14.2	0.094579	0.006175	-0.000600	0.001431	0.005950	0.003685	0.0034153	0.0009005	0.249	0.705
23.	10.0	-9.0	-14.2	0.072177	0.003884	-0.000911	0.001353	0.004039	0.002698	0.0024531	0.0009179	0.248	0.709
24.	8.0	-9.0	-14.2	0.051118	0.000592	-0.000776	0.001270	0.002416	0.001857	0.0016355	0.0012027	0.245	0.702
25.	11.0	-9.0	-14.5	0.079768	0.005091	-0.001034	0.001255	0.004502	0.003122	0.0028878	0.0009249	0.249	0.705
26.	11.0	-9.0	-15.9	0.074446	0.005942	-0.001387	0.001399	0.002765	0.003421	0.0032071	0.0011175	0.250	0.703
27.	11.0	-9.0	-17.4	0.071822	0.007623	-0.001367	0.000627	0.001434	0.003857	0.0037114	0.0012492	0.249	0.705
28.	11.0	-9.0	-12.9	0.088616	0.003819	-0.000720	0.001262	0.006682	0.002320	0.0025881	0.0007794	0.249	0.705
29.	11.0	-9.0	-11.4	0.093413	0.001781	-0.000642	0.001798	0.008597	0.002458	0.0021467	0.0007472	0.248	0.708
30.	11.0	-9.0	-14.2	0.082475	0.005120	-0.000900	0.001507	0.004660	0.003204	0.0029292	0.0009120	0.249	0.703

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ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/21/68

TEST 316.0 RUN 14 STATIC 1 UPDATE = 6 17 68 1200 TIME 834.96

STATIC NO. CHANGES FROM 1 TO 3 ON PT 100. LAST STATIC NO ENCOUNTERED IS THE ONE ACTUALLY USED.

(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WON'T HELP.)

BAROMETRIC PRESSURE = 30.01

CONFIG. FRBV

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPD	OMEGA*R CQ CQD	TEMP M,OMR M,AT	NOTES RPM THETA
1	-3.00	4.95	28.97	2435.	237.	-101.	-168.	1459.	-4.	116.3	642.6	79.0	
1	-2.95	0.2265	94.76	2.8101	0.1449	-0.1183	-0.0148	0.1163	0.0010	0.0035955	0.0035955	0.5653	466.
	-7.95	4.80	0.2489	0.087029	-0.004488	-0.003689	-0.000460	0.003602	0.000031	0.0038847	0.0038847	0.7057	8.0
2	-5.30	4.95	28.78	2130.	165.	-91.	-48.	1536.	-140.	127.1	642.6	79.0	
1	-1.40	0.2265	94.44	2.4715	0.0605	-0.1098	-0.0043	0.1272	-0.0104	0.0039273	0.0039273	0.5653	466.
	-9.95	4.52	0.2481	0.076037	-0.001861	-0.003379	-0.000131	0.003914	-0.000321	0.0037550	0.0037550	0.7052	8.0
3	-7.00	4.95	28.81	1885.	123.	-89.	-673.	1631.	-193.	137.0	642.6	80.0	
1	-0.26	0.2261	94.57	2.1895	0.0098	-0.1110	-0.0599	0.1366	-0.0157	0.0042423	0.0042423	0.5645	466.
	-11.95	4.09	0.2484	0.067263	-0.000304	-0.003423	-0.001848	0.004215	-0.000486	0.0038223	0.0038223	0.7547	8.0
4	0.00	4.95	28.85	2895.	383.	-118.	116.	1215.	64.	90.9	642.6	80.0	
1	-5.45	0.2251	94.69	3.3544	0.3199	-0.1374	0.0103	0.0910	0.0046	0.0028148	0.0028148	0.5645	466.
	-4.95	5.04	0.2487	0.103736	-0.009893	-0.004250	0.000318	0.002815	0.000143	0.0040983	0.0040983	0.7049	8.0
5	-3.00	4.95	29.33	2435.	245.	-133.	-218.	1453.	-123.	116.3	642.6	80.0	
1	-3.11	0.2261	95.39	2.7768	0.1511	-0.1205	-0.0191	0.1144	-0.0097	0.0036025	0.0036025	0.5645	466.
	-7.95	4.76	0.2506	0.087161	-0.004742	-0.003781	-0.000600	0.003591	-0.000306	0.0039659	0.0039659	0.7059	8.0
6	-3.00	4.95	29.02	1895.	246.	-92.	-727.	1281.	-71.	101.5	642.6	80.0	
1	-4.07	0.2261	94.92	2.1766	0.1549	-0.1082	-0.0625	0.1010	-0.0051	0.0031442	0.0031442	0.5645	466.
	-7.95	4.04	0.2493	0.067643	-0.004816	-0.003364	-0.001943	0.003140	-0.000158	0.0038456	0.0038456	0.7052	6.0
7	-3.00	4.95	29.14	3095.	255.	-131.	404.	1694.	-88.	137.9	642.6	80.0	
1	-2.64	0.2261	95.12	3.5586	0.1642	-0.1185	0.0356	0.1367	-0.0067	0.0042716	0.0042716	0.5645	466.
	-7.95	5.22	0.2498	0.111158	-0.005126	-0.003698	0.001110	0.004266	-0.000210	0.0042094	0.0042094	0.7055	10.0
8	-9.00	4.95	28.95	2510.	-18.	-79.	-432.	2179.	-371.	187.5	642.6	80.0	
1	3.09	0.2261	94.80	2.8953	-0.1562	-0.1037	-0.0383	0.1843	-0.0333	0.0058059	0.0058059	0.5645	466.
	-13.95	5.22	0.2493	0.089760	0.004843	-0.003215	-0.001187	0.005715	-0.001033	0.0037200	0.0037200	0.7051	11.0
9	-11.00	4.95	28.92	2170.	-62.	-79.	-605.	2252.	-329.	192.8	642.6	80.0	
1	4.76	0.2261	94.76	2.4956	-0.2080	-0.1094	-0.0537	0.1991	-0.0321	0.0059709	0.0059709	0.5645	466.
	-15.95	4.76	0.2489	0.077306	0.006443	-0.003391	-0.001662	0.005889	-0.000995	0.0037141	0.0037141	0.7059	11.0
10	-7.00	4.95	28.92	2780.	54.	-98.	84.	215.	-177.	178.3	642.6	80.0	

1	1.27	0.2261	94.76	3.2164	-0.0713	-0.1096	0.0075	0.1778	-0.0145	0.0055224	0.0055224	0.5645	466.
	-11.95	5.31	0.2489	0.099634	0.002209	-0.003395	0.000231	0.005509	-0.000448	0.0038878	0.0038878	0.7050	11.0
11	-6.00	4.95	28.95	2930.	109.	-85.	132.	2365.	-2.	172.8	642.6	80.0	
1	0.11	0.2261	94.80	3.3897	-0.0066	-0.1042	0.0117	0.1737	0.0014	0.0053498	0.0053498	0.5645	466.
	-10.95	5.23	0.2490	0.105090	0.000205	-0.003230	0.000364	0.005384	0.000043	0.0040925	0.0040925	0.7051	11.0
12	-9.00	4.95	29.14	2480.	-20.	-83.	-165.	2233.	-224.	189.8	642.6	80.0	
1	3.19	0.2261	95.12	2.8408	-0.1583	-0.1081	-0.0145	0.1874	-0.0204	0.0058767	0.0058767	0.5645	466.
	-13.95	5.13	0.2498	0.088657	0.004942	-0.003374	-0.000454	0.005849	-0.000637	0.0037864	0.0037864	0.7055	11.0
13	-9.00	5.85	41.14	2150.	193.	-114.	-856.	2356.	-211.	181.6	642.6	82.0	
1	-0.70	0.2240	113.57	1.7138	0.0210	-0.1163	-0.0534	0.1259	-0.0215	0.0056783	0.0056783	0.5635	466.
	-14.85	4.03	0.2983	0.076239	-0.000936	-0.005173	-0.002375	0.005601	-0.000933	0.0054274	0.0054274	0.7315	11.0
14	-11.00	5.85	41.10	1785.	175.	-95.	-948.	2345.	-246.	180.7	642.6	82.0	
1	-0.25	0.2240	113.50	1.4107	0.0061	-0.1065	-0.0592	0.1245	-0.0258	0.0056497	0.0056497	0.5635	466.
	-16.85	3.45	0.2981	0.062684	-0.000269	-0.004733	-0.002631	0.005533	-0.001146	0.0053715	0.0053715	0.7314	11.0
15	-7.00	5.85	41.17	2485.	254.	-112.	-408.	2158.	-52.	161.9	642.6	82.0	
1	-2.07	0.2240	113.60	1.9910	0.0718	-0.1100	-0.0254	0.1134	-0.0095	0.0050629	0.0050629	0.5635	466.
	-12.85	4.61	0.2984	0.088622	-0.003196	-0.004896	-0.001132	0.005049	-0.000423	0.0053006	0.0053006	0.7316	11.0
16	-5.00	5.85	41.00	2840.	340.	-108.	139.	2031.	12.	148.9	642.6	83.0	
1	-3.61	0.2236	113.47	2.2932	0.1448	-0.1136	0.0087	0.1150	-0.0050	0.0046644	0.0046644	0.5629	466.
	-10.85	4.80	0.2980	0.101848	-0.006433	-0.004599	0.000387	0.004663	-0.000221	0.0056349	0.0056349	0.7307	11.0
17	-9.00	5.85	41.29	2120.	198.	-113.	-613.	2342.	-153.	179.5	642.6	83.0	
1	-0.83	0.2235	113.87	1.6832	0.0245	-0.1151	-0.0381	0.1245	-0.0173	0.0056227	0.0056227	0.5629	466.
	-14.85	3.99	0.2991	0.075279	-0.001096	-0.005150	-0.001705	0.005570	-0.000773	0.0054351	0.0054351	0.7313	11.0
18	-3.00	5.65	41.38	2290.	415.	-128.	-192.	1544.	31.	102.4	642.6	83.0	
1	-6.42	0.2235	114.00	1.8227	0.2050	-0.1167	-0.0119	0.0714	-0.0041	0.0032078	0.0032078	0.5629	466.
	-8.65	4.23	0.2994	0.081711	-0.009189	-0.005231	-0.000533	0.003203	-0.000184	0.0053528	0.0053528	0.7315	8.0
19	-5.00	5.65	41.31	1925.	353.	-116.	-707.	1602.	-116.	111.7	642.6	83.0	
1	-5.73	0.2235	113.90	1.5276	0.1532	-0.1094	-0.0439	0.0773	-0.0128	0.0034979	0.0034979	0.5629	466.
	-10.65	3.82	0.2992	0.068360	-0.006857	-0.004897	-0.001964	0.003461	-0.000574	0.0051244	0.0051244	0.7314	8.0
20	-7.00	5.65	41.40	1535.	330.	-112.	-1010.	1695.	-137.	121.8	642.6	83.0	
1	-6.28	0.2235	114.04	1.2542	0.1325	-0.1094	-0.0625	0.0839	-0.0147	0.0038165	0.0038165	0.5629	466.
	-12.65	3.07	0.2995	0.054014	-0.005943	-0.004909	-0.002806	0.003765	-0.000657	0.0053317	0.0053317	0.7316	8.0
21	-1.00	5.65	41.38	2640.	501.	-143.	112.	1379.	46.	83.3	642.6	83.0	
1	-7.50	0.2235	114.00	2.1066	0.2773	-0.1277	0.0069	0.0582	-0.0046	0.0026101	0.0026101	0.5629	466.
	-6.65	4.57	0.2994	0.094438	-0.012431	-0.005723	0.000311	0.002607	-0.000207	0.0055222	0.0055222	0.7315	8.0
22	-3.00	5.65	41.29	2300.	411.	-129.	-425.	1508.	-112.	100.0	642.6	83.0	
1	-6.30	0.2235	113.87	1.8352	0.2025	-0.1177	-0.0264	0.0695	-0.0130	0.0031335	0.0031335	0.5629	466.
	-8.65	4.33	0.2991	0.082078	-0.009058	-0.005266	-0.001180	0.003197	-0.000581	0.0052300	0.0052300	0.7313	8.0

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23	-3.00	5.65	41.33	1685.	418.	-117.	-696.	1372.	-5.	87.4	642.6	83.0	
1	-8.88	0.2235	113.94	1.3333	0.2078	-0.1078	-0.0432	0.0609	-0.0063	0.0027380	0.0027380	0.5629	466.
	-8.65	3.32	0.2993	0.059569	-0.009307	-0.004827	-0.001934	0.002727	-0.000284	0.0052036	0.0052006	0.7314	6.0
24	-3.00	5.65	41.33	2885.	435.	-134.	205.	1673.	-22.	114.1	642.6	84.0	
1	-5.48	0.2231	114.04	2.3112	0.2217	-0.1217	0.0127	0.0796	-0.0074	0.0035820	0.0035820	0.5624	466.
	-8.65	4.88	0.2995	0.103679	-0.009947	-0.005460	0.000570	0.003569	-0.000333	0.0035853	0.0035853	0.7309	10.0
25	-3.00	8.80	41.43	1860.	335.	-123.	-1307.	1794.	-185.	129.5	642.6	84.0	
1	-5.42	0.2231	114.14	1.4708	0.1395	-0.1125	-0.0810	0.0869	-0.0175	0.0039392	0.0039392	0.5624	466.
	-11.80	3.54	0.2998	0.066094	-0.006269	-0.005057	-0.003640	0.003903	-0.000786	0.0054222	0.0054222	0.7310	8.0
26	-3.00	2.75	41.24	2685.	522.	-132.	856.	1256.	179.	76.4	642.6	84.0	
1	-7.77	0.2231	113.91	2.1527	0.2939	-0.1203	0.0520	0.0539	0.0050	0.0023971	0.0023971	0.5624	466.
	-5.75	4.65	0.2992	0.096346	-0.013153	-0.005385	0.002327	0.002412	0.000226	0.0054882	0.0054882	0.7307	8.0
27	-4.00	7.40	55.71	2330.	555.	-156.	-594.	2399.	134.	151.0	642.6	84.0	
1	-7.78	0.2216	132.86	1.3846	0.1891	-0.0966	-0.0273	0.0796	0.0146	0.0047719	0.0047719	0.5624	466.
	-11.47	3.45	0.3489	0.084297	-0.011514	-0.005884	-0.001664	0.004846	0.000888	0.0082358	0.0082358	0.7587	10.0
28	-2.00	7.30	55.80	2720.	662.	-154.	-112.	1941.	166.	134.8	645.4	84.0	
1	-8.96	0.2216	132.97	1.6175	0.2551	-0.0933	-0.0052	0.0701	0.0153	0.0042043	0.0042043	0.5648	468.
	-9.30	3.64	0.3478	0.097808	-0.015426	-0.005643	-0.000312	0.004239	0.000923	0.0088206	0.0088206	0.7613	10.0
29	-6.00	7.35	55.75	2840.	515.	-158.	-1093.	2145.	102.	158.1	645.4	84.0	
1	-8.38	0.2216	132.91	1.0859	0.1601	-0.1026	-0.0553	0.0835	0.0131	0.0049339	0.0049339	0.5648	468.
	-13.35	2.84	0.3476	0.065604	-0.009670	-0.006081	-0.003938	0.005044	0.000791	0.0079584	0.0079584	0.7612	10.0
30	-4.00	7.35	55.99	2285.	555.	-168.	-432.	2079.	197.	150.7	645.4	84.0	
1	-7.89	0.2215	133.20	1.3510	0.1871	-0.1030	-0.0198	0.0789	0.0178	0.0047016	0.0047016	0.5648	468.
	-11.35	3.40	0.3484	0.081972	-0.011353	-0.006250	-0.001252	0.004789	0.001083	0.0081317	0.0081317	0.7616	13.0
31	-4.00	7.35	55.71	1905.	571.	-155.	1114.	1954.	23.	140.3	645.4	84.0	
1	-10.01	0.2216	132.86	1.1268	0.1988	-0.0960	0.0513	0.0734	0.0095	0.0043776	0.0043776	0.5648	468.
	-11.35	2.85	0.3475	0.068020	-0.012002	-0.005797	0.003097	0.004428	0.000572	0.0081854	0.0081854	0.7611	8.0
32	-4.00	7.30	55.73	1235.	735.	-168.	12069.	2079.	281.	149.9	645.4	84.0	
1	-22.48	0.2216	132.88	0.7203	0.2981	-0.1038	0.5564	0.0791	0.0214	0.0046760	0.0046760	0.5648	468.
	-11.30	1.42	0.3475	0.043496	-0.018000	-0.006271	0.033602	0.004778	0.001291	0.0107835	0.0107835	0.7611	8.0
33	-4.00	7.30	55.82	2655.	575.	-157.	-29.	2225.	245.	163.1	645.4	84.0	
1	-7.23	0.2216	133.00	1.5786	0.2004	-0.0969	-0.0013	0.0857	0.0198	0.0050889	0.0050889	0.5648	468.
	-11.30	3.68	0.3478	0.095493	-0.012122	-0.005861	-0.000079	0.005185	0.001201	0.0085921	0.0085921	0.7613	11.0
34	-4.00	7.35	55.75	2000.	362.	-150.	-821.	1960.	61.	140.7	645.4	84.0	
1	-9.26	0.2216	132.91	1.1835	0.1930	-0.0929	-0.0378	0.0736	0.0113	0.0043891	0.0043891	0.5648	468.
	-11.35	3.03	0.3476	0.071504	-0.011662	-0.005610	-0.002281	0.004447	0.000681	0.0080426	0.0080426	0.7612	9.0
35	-8.70	7.40	55.75	1685.	444.	-158.	-1420.	2530.	-109.	194.8	645.4	88.0	
1	-6.85	0.2250	133.40	0.9883	0.1188	-0.1064	-0.0653	0.1.20	0.0017	0.0061206	0.0061206	0.5628	468.
	-16.10	2.53	0.3409	0.060146	-0.007229	-0.006475	-0.003976	0.006208	0.000102	0.0083605	0.0083605	0.7591	11.0

36	-10.40	7.40	55.62	1330.	461.	-135.	-1647.	2320.	-207.	176.3	645.4	88.0		
1	-9.54	0.2200	133.23	0.7739	0.1295	-0.0975	-0.0759	0.0919	-0.0051	0.0055406	0.0055406	0.5628	468.	
	-17.80	2.34	0.3484	0.046798	-0.007863	-0.005919	-0.004610	0.005577	-0.000309	0.0081094	0.0081094	0.7589	11.0	
37	-6.40	7.45	55.82	2205.	471.	-160.	-970.	2387.	71.	180.4	645.4	88.0		
1	-5.94	0.2199	133.49	1.3052	0.1357	-0.1024	-0.0446	0.0949	0.0116	0.0056710	0.0056710	0.5628	468.	
	-13.85	3.37	0.3491	0.079536	-0.008272	-0.006238	-0.002716	0.005786	0.000707	0.0080659	0.0080659	0.7592	11.0	
38	-4.00	7.55	55.80	2280.	557.	-165.	-876.	2112.	202.	153.4	645.4	88.0		
1	-7.98	0.2199	133.46	1.3522	0.1897	-0.1018	-0.0403	0.0896	0.0178	0.0048204	0.0048204	0.5628	468.	
	-11.55	3.35	0.3490	0.082363	-0.011552	-0.006201	-0.002452	0.004908	0.001087	0.0083239	0.0083239	0.7592	10.0	
39	-4.00	6.60	55.92	2480.	587.	-162.	-268.	2023.	166.	145.8	645.4	88.0		
1	-8.01	0.2199	133.60	1.4704	0.2069	-0.0996	-0.0123	0.0764	0.0163	0.0045834	0.0045834	0.5628	468.	
	-10.60	3.59	0.3494	0.089756	-0.012632	-0.006081	-0.000750	0.004664	0.000996	0.0083701	0.0083701	0.7594	10.0	
40	-4.00	5.85	55.85	2625.	622.	-166.	68.	1882.	271.	132.5	645.4	88.0		
1	-8.34	0.2199	133.51	1.5598	0.2286	-0.1023	0.0031	0.0700	0.0211	0.0041652	0.0041652	0.5628	468.	
	-9.85	3.77	0.3492	0.095093	-0.013939	-0.006234	0.000191	0.004265	0.001284	0.0083281	0.0083281	0.7593	10.0	
41	-4.00	8.13	55.85	2235.	544.	-162.	-1012.	2145.	208.	156.3	645.4	88.0		
1	-7.80	0.2199	133.51	1.3239	0.1815	-0.0998	-0.0465	0.0821	0.0182	0.0049130	0.0049130	0.5628	468.	
	-12.10	3.31	0.3492	0.080710	-0.011062	-0.006086	-0.002834	0.005002	0.001107	0.0082684	0.0082684	0.7593	10.0	
42	-3.00	5.20	29.34	2460.	237.	-107.	-133.	1433.	-99.	115.6	645.4	88.0		
1	-2.92	0.2228	95.66	2.8323	0.1443	-0.1257	-0.0117	0.1143	-0.0076	0.0035869	0.0035869	0.5628	468.	
	-8.20	4.91	0.2502	0.088632	-0.004515	-0.003933	-0.000367	0.003578	-0.000237	0.0038614	0.0038614	0.7036	8.0	
43	-3.00	7.90	29.09	2145.	155.	-105.	-1164.	1674.	-236.	137.6	645.4	88.0		
1	-1.13	0.2228	95.74	2.4613	0.0486	-0.1232	-0.1026	0.1353	-0.0197	0.0042687	0.0042687	0.5628	468.	
	-10.90	4.38	0.2504	0.077160	-0.001523	-0.003863	-0.003217	0.004242	-0.000619	0.0040033	0.0040033	0.7937	8.0	
44	-3.00	1.90	28.71	2825.	358.	-99.	901.	1131.	71.	88.7	645.4	88.0		
1	-5.02	0.2228	95.11	3.2956	0.2897	-0.1170	0.0805	0.0895	0.0081	0.0027508	0.0027508	0.5628	468.	
	-4.90	5.25	0.2487	0.101949	-0.008963	-0.003619	0.002489	0.002768	0.000249	0.0038436	0.0038436	0.7028	8.0	
45	-3.00	4.85	28.99	2465.	237.	-101.	98.	1426.	-46.	114.8	645.4	88.0		
1	-2.91	0.2228	95.58	2.8426	0.1447	-0.1188	0.0087	0.1140	-0.0028	0.0035616	0.0035616	0.5628	468.	
	-7.85	4.94	0.2500	0.088819	-0.004521	-0.003711	0.000271	0.003562	-0.000087	0.0038334	0.0038334	0.7935	8.0	

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11459.	11575.	15203.	3317.	3129.	9200.	9195.	3.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57295.0	57875.0	15203.0	8291.3	7821.3	9200.0	9195.0	0.675	1409.	

T = 3 CP = CQ.

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES   06/21/68 TIME 834.96

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.0 RUN 14

CONFIG. FRBV

LOH HELICOPTER   SKEWER TARE   TAIL OFF

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)
1.	8.0	-3.0	-7.9	0.087029	-0.004488	-0.003680	0.000031	-0.000469	0.003602	0.0035955	0.0038847	0.249	0.706
2.	8.0	-5.0	-9.9	0.076037	-0.001861	-0.003379	-0.000321	-0.000131	0.003914	0.0039273	0.0037550	0.248	0.705
3.	8.0	-7.0	-11.9	0.067263	-0.000304	-0.003423	-0.000486	-0.001848	0.004215	0.0042423	0.0038223	0.248	0.705
4.	8.0	[illegible]	-4.9	0.123736	-0.009893	-0.004252	0.000143	0.000318	0.002815	0.0028148	0.0040983	0.249	0.705
5.	8.0	-3.0	-7.9	0.087161	-0.004742	-0.003781	-0.000306	-0.000600	0.003591	0.0036025	0.0039659	0.251	0.706
6.	6.0	-3.0	-7.9	0.067648	-0.004816	-0.003364	-0.000158	-0.001943	0.003140	0.0031442	0.0038456	0.249	0.705
7.	10.0	-3.0	-7.9	0.111656	-0.005126	-0.003698	-0.000210	0.001119	0.004266	0.0042716	0.0042094	0.250	0.706
8.	11.0	-9.0	-13.9	0.089767	0.004843	-0.003215	-0.001033	-0.001187	0.005715	0.0058059	0.0037200	0.249	0.705
9.	11.0	-11.0	-15.9	0.077306	0.006443	-0.003390	-0.000995	-0.001662	0.005889	0.0059709	0.0037141	0.249	0.705
10.	11.0	-7.0	-11.9	0.099634	0.002209	-0.003395	-0.000448	0.000231	0.005509	0.0055224	0.0038878	0.249	0.705
11.	11.0	-6.0	-10.9	0.105090	0.000205	-0.003230	0.000043	0.000364	0.005384	0.0053498	0.0040925	0.249	0.705
12.	11.0	-9.0	-13.9	0.088657	0.004942	-0.003374	-0.000637	-0.000454	0.005849	0.0056767	0.0037864	0.250	0.706
13.	11.0	-9.0	-14.8	0.076239	-0.000936	-0.005173	-0.000933	-0.002375	0.005601	0.0056783	0.0054274	0.298	0.732
14.	11.0	-11.0	-16.8	0.062684	-0.000269	-0.004733	-0.001146	-0.002631	0.005533	0.0056497	0.0053715	0.298	0.731
15.	11.0	-7.0	-12.8	0.088622	-0.003196	-0.004896	-0.005423	-0.001132	0.005049	0.0050629	0.0053606	0.298	0.732
16.	11.0	-5.0	-10.8	0.101848	-0.006433	-0.004599	-0.000221	0.000387	0.004663	0.0046644	0.0056349	0.298	0.731
17.	11.0	-9.0	-14.8	0.075279	-0.001096	-0.005150	-0.000773	-0.001705	0.005570	0.0056227	0.0054351	0.299	0.731
18.	8.0	-3.0	-8.6	0.081711	-0.009189	-0.005231	-0.000184	-0.000533	0.003203	0.0032078	0.0053528	0.299	0.732
19.	8.0	-5.0	-10.6	0.068360	-0.006857	-0.004897	-0.000574	-0.001964	0.003461	0.0034979	0.0051244	0.299	0.731
20.	8.0	-7.0	-12.6	0.054014	-0.005943	-0.004909	-0.000657	-0.002806	0.003765	0.0038165	0.0053317	0.300	0.732
21.	8.0	-1.0	-6.6	0.094439	-0.012431	-0.005723	-0.000277	0.000311	0.002697	0.0026101	0.0055222	0.299	0.732
22.	8.0	-3.0	-8.6	0.082078	-0.009358	-0.005266	-0.000561	-0.001180	0.003137	0.0031335	0.0052300	0.299	0.731
23.	6.0	-3.0	-8.6	0.059569	-0.009307	-0.004827	-0.000264	-0.001934	0.002727	0.0027380	0.0052006	0.299	0.731
24.	10.0	-3.0	-8.6	0.103679	-0.009947	-0.005460	-0.000333	0.000573	0.003569	0.0035820	0.0055853	0.300	0.731
25.	8.0	-3.0	-11.8	0.066094	-0.006269	[illegible]	-0.000786	-0.003640	0.003903	0.0039392	0.0054222	0.300	0.731
26.	8.0	-3.0	-5.7	0.096346	-0.013153	-0.005385	0.000226	0.002327	0.002412	0.0023971	0.0054882	0.299	0.731
27.	10.0	-4.0	-11.4	0.084297	-0.011514	-0.005884	0.000888	-0.001664	0.004846	0.0047719	0.0082358	0.349	0.759
28.	10.0	-2.0	-9.3	0.097808	-0.015426	-0.005643	0.000923	-0.000312	0.004239	0.0042043	0.0088206	0.348	0.761
29.	10.0	-6.0	-13.3	0.065634	-0.009673	-0.006281	0.000791	-0.023238	0.005066	0.0049339	0.0079584	0.348	0.761
30.	10.0	-4.0	-11.3	0.081972	-0.011353	-0.006250	0.001083	-0.001202	0.004789	0.0047516	0.0081317	0.348	0.762
31.	8.0	-4.0	-11.3	0.068320	-0.012002	-0.005797	0.000572	0.003097	0.004428	0.0043776	0.0081854	0.347	0.761
32.	8.0	-4.0	-11.3	0.043496	-0.018000	-0.006271	0.001291	0.033602	0.004776	0.0046760	0.0107835	0.340	0.761
33.	11.0	-4.0	-11.3	0.095493	-0.012122	-0.005861	0.001201	-0.000079	0.005185	0.0050889	0.0085921	0.348	0.761
34.	9.0	-4.0	-11.3	0.071539	-0.011662	-0.005610	0.000681	-0.002281	0.004447	0.0043891	0.0080426	0.346	0.761
35.	11.0	-8.7	-16.1	0.060146	-0.007229	-0.006475	0.000102	-0.003976	0.006208	0.0061206	0.0083605	0.349	0.759
36.	11.0	-10.4	-17.8	0.046798	-0.007863	-0.005919	-0.000309	-0.004610	0.005577	0.0055406	0.0081094	0.348	0.759
37.	11.0	-6.4	-13.8	0.079536	-0.008272	-0.006238	0.000707	-0.002716	0.005786	0.0056710	0.0080659	0.349	0.759
38.	10.0	-4.0	-11.5	0.082363	-0.011552	-0.006201	0.001067	-0.002452	0.004908	0.0048204	0.0083239	0.349	0.759
39.	10.0	-4.0	-10.6	0.089756	-0.012632	-0.006081	0.000996	-0.000750	0.004664	0.0045834	0.0083701	0.349	0.759
40.	10.0	-4.0	-9.8	0.095093	-0.013939	-0.006234	0.001284	0.000191	0.004265	0.0041652	0.0083281	0.349	0.759
41.	10.0	-4.0	-12.1	0.080710	-0.011062	-0.006086	0.001107	-0.002834	0.005002	0.0049130	0.0082684	0.349	0.757
42.	8.0	-3.0	-8.2	0.088632	-0.004515	-0.003933	-0.000237	-0.000367	0.003578	0.0035860	0.0038614	0.250	0.774
43.	8.0	-3.0	-10.9	0.077160	-0.001523	-0.003863	-0.000619	-0.003217	0.004242	0.0042687	0.0040033	0.250	0.704
44.	8.0	-3.0	-4.9	0.101949	-0.008963	-0.003619	0.000249	0.002489	0.002768	0.0027508	0.0038436	0.249	0.703
45.	8.0	-3.0	-7.8	0.088819	-0.004521	-0.003711	-0.000087	0.000271	0.003562	0.0035616	0.0038334	0.250	0.703

152062

ROTOR SCALE DATA * PROGRAM LA3531 * WIND AXES

06/21/68
UPDATE = 6 17 68 1200 TIME 834.96

TEST 316.0 RUN 15 STATIC 3

CONFIG. FRB

BAROMETRIC PRESSURE = 30.02

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / - CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQO	TEMP / N,OMR / M,AT	NOTES / RPM / THETA
1	-3.00	4.30	55.41	1620.	658.	-145.	-257.	1601.	225.	165.0	639.9	76.0	464.
1	-14.90	0.2250	131.48	0.9584	0.2550	-0.0898	-0.0119	0.0560	0.0180	0.0033093	0.0033093	0.5642	5.5
	-7.30	2.37	0.3468	0.057645	-0.015330	-0.005402	-0.000717	0.003371	0.001084	0.0083684	0.0083684	0.7599	
2	-3.00	4.60	72.09	1410.	917.	-159.	-617.	1642.	-15679.	223.2	639.9	76.0	464.
1	-20.84	0.2232	150.59	0.6817	0.2595	-0.0451	-0.0219	0.0639	-0.5164	0.0070947	0.0070947	0.5642	5.5
	-7.60	1.44	0.3972	0.053782	-0.020476	-0.003555	-0.001731	0.004969	-0.040744	0.0150303	0.0150303	0.7883	
3	-4.00	4.60	72.99	1135.	915.	-157.	-630.	1664.	414.	154.5	639.9	76.0	464.
1	-24.52	0.2231	151.56	0.5499	0.2539	-0.0421	-0.0221	0.0657	0.0586	0.0049139	0.0049139	0.5642	5.5
	-8.60	1.39	0.3998	0.043945	-0.029049	-0.003368	-0.001768	0.005253	0.004684	0.0127982	0.0127982	0.7897	
5	-1.80	4.60	72.79	1680.	951.	-164.	-399.	1636.	472.	149.8	639.9	76.0	464.
1	-18.68	0.2231	151.34	0.8023	0.2712	-0.0441	-0.0141	0.0617	0.0591	0.0047631	0.0047631	0.5642	5.5
	-6.40	1.94	0.3992	0.063934	-0.021613	-0.003517	-0.001120	0.004913	0.004709	0.0131129	0.0131129	0.7894	
6	-0.80	4.60	72.79	2005.	1008.	-164.	152.	1538.	303.	139.8	639.9	76.0	464.
1	-17.43	0.2231	151.34	0.9519	0.2988	-0.0437	0.0053	0.0565	0.0523	0.0044448	0.0044448	0.5642	5.5
	-5.40	2.21	0.3992	0.075856	-0.023811	-0.003482	0.000426	0.004503	0.004165	0.0135584	0.0135584	0.7894	
7	-2.60	5.40	72.60	1675.	913.	-164.	-590.	1880.	387.	171.7	639.9	76.0	464.
1	-17.58	0.2231	151.14	0.8020	0.2542	-0.0453	-0.0209	0.0713	0.0562	0.0054576	0.0054576	0.5642	5.5
	-8.00	1.92	0.3987	0.063738	-0.020230	-0.003630	-0.001657	0.005666	0.004469	0.0132340	0.0132340	0.7891	
8	-3.50	5.40	72.60	1525.	911.	-168.	-588.	1884.	535.	171.8	639.9	76.0	464.
1	-19.01	0.2231	151.14	0.7326	0.2524	-0.0489	-0.0208	0.0726	0.0618	0.0054602	0.0054602	0.5642	6.5
	-8.90	1.76	0.3987	0.058226	-0.020059	-0.003814	-0.001652	0.005771	0.004915	0.0132263	0.0132263	0.7891	
9	-1.00	5.40	72.55	2140.	986.	-171.	87.	1730.	402.	156.0	639.9	76.0	464.
1	-15.92	0.2231	151.09	1.0172	0.2932	-0.0478	0.0031	0.0634	0.0554	0.0049590	0.0049590	0.5642	6.5
	-6.40	2.32	0.3986	0.080789	-0.023050	-0.003796	0.000244	0.005037	0.004404	0.0137004	0.0137004	0.7890	

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11460.	11576.	15204.	3317.	3127.	9201.	9195.	3.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57300.0	57880.0	15204.0	8292.5	7817.5	9201.0	9195.0	0.075	1409.	

T = 3 CP = CQ.

Best Available Copy

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

06/21/68
TIME 834.96

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.3 RUN 15

CONFIG. FRB

LOH HELICOPTER SKEWER TARE TAIL OFF

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)
1.	5.5	-3.0	-7.3	0.057645	-0.015338	-0.005402	0.001984	-0.000717	0.003371	0.0033093	0.0083684	0.347	0.760
2.	5.5	-3.0	-7.6	0.053782	-0.020476	-0.003550	-0.040744	-0.001731	0.004969	0.0070947	0.0150303	0.397	0.788
3.	5.5	-4.0	-8.6	0.043945	-0.020049	-0.003368	0.034684	-0.001768	0.005255	0.0049139	0.0127982	0.45[illegible]	0.790
5.	5.5	-1.8	-6.4	0.063934	-0.021613	-0.003517	0.004709	-0.001123	0.004913	0.0047631	0.0131129	0.399	0.789
6.	5.5	-0.8	-5.4	0.075856	-0.023811	-0.003482	0.034165	0.000426	0.004503	0.0044448	0.0135584	0.399	0.789
7.	5.5	-2.6	-8.0	0.063738	-0.020200	-0.003600	0.034469	-0.001657	0.005666	0.0054576	0.013234[illegible]	0.399	0.789
8.	6.5	-3.5	-8.9	0.058226	-0.020059	-0.003814	0.034915	-0.001652	0.005771	0.0054602	0.0132263	0.399	0.789
9.	6.5	-1.0	-6.4	0.089789	-0.023050	-0.003796	0.004474	0.000244	0.005037	0.0049590	0.0137004	0.399	0.789

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/21/68
UPDATE = 6 17 68 1200 TIME 834.96

TEST 316.0 RUN 16 STATIC 3
BEGINNING ZERO ONLY

CONFIG. ERB

BAROMETRIC PRESSURE = 29.99

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQO	TEMP / M,OMR / M	NOTES / RPM / ETA
1	0.00	-1.25	1.00	1540.	0.	14.	-67.	1275.	-73.	0.0	0.0	69.0	Q=0
1	0.00	0.2338	0.00	52.0270	-0.0000	0.4730	-0.1729	3.2706	-0.1866	0.0000000	0.0000000	0.0000	0.
	1.25	0.00	0.0000	0.000000	0.000000	0.000000	-0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	6.0
2	0.00	-0.55	1.00	1975.	-19.	-11.	366.	1659.	-91.	0.0	0.0	69.0	Q=0
1	0.55	0.2338	0.00	66.7230	-0.6419	-0.3716	0.9376	4.2546	-0.2329	0.0000000	0.0000000	0.0000	0.
	0.05	0.00	0.0000	0.000000	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	8.0
3	0.00	-0.50	1.00	2555.	-1.	16.	-188.	2394.	-252.	212.4	642.6	69.0	Q=0
1	0.02	0.2329	0.00	84.6284	-0.0338	0.5405	-0.2763	6.1407	-0.6470	0.0063589	0.0063589	0.5703	466.
	0.50	0.00	0.0000	0.087636	0.000035	0.000560	-0.000286	0.006359	-0.000670	************	************	0.5703	10.0
4	0.00	-0.85	1.00	2775.	-4.	14.	283.	2689.	-284.	236.5	642.6	72.0	Q=0
1	0.08	0.2325	0.00	93.7500	-0.1351	0.4730	0.7249	6.8972	-0.7287	0.0071828	0.0071828	0.5687	466.
	0.85	0.00	0.0000	0.097633	0.000141	0.000493	0.000755	0.007183	-0.000759	************	************	0.5687	10.9
5	-2.60	4.50	72.88	1460.	928.	-174.	-516.	1745.	355.	161.1	639.9	78.0	
1	-20.30	0.2220	151.80	0.7004	0.2590	-0.0490	-0.0132	0.0660	0.0557	0.0051467	0.0051467	0.5631	464.
	-7.10	1.71	0.4004	0.056151	-0.020767	-0.003929	-0.001456	0.005355	0.004466	0.0132481	0.0132481	0.7886	5.5
6	-3.30	4.20	72.76	1275.	923.	-175.	-451.	1637.	381.	153.3	648.1	92.0	
1	-22.66	0.2164	153.64	0.6155	0.2569	-0.0505	-0.0159	0.0638	0.0567	0.0048351	0.0048351	0.5631	470.
	-7.50	1.54	0.4001	0.049265	-0.020565	-0.004042	-0.001273	0.005105	0.004538	0.0128980	0.0128980	0.7884	5.0
7	-1.50	4.20	72.86	1670.	963.	-178.	-57.	1555.	418.	144.6	648.1	94.0	
1	-19.14	0.2156	154.02	0.7969	0.2766	-0.0512	-0.0020	0.0584	0.0571	0.0045755	0.0045755	0.5621	470.
	-5.70	1.94	0.4011	0.064098	-0.022247	-0.004041	-0.000161	0.004697	0.004594	0.0132200	0.0132200	0.7876	5.0
8	-4.00	4.20	72.65	1055.	914.	-170.	-618.	1667.	334.	156.6	650.9	98.0	
1	-26.21	0.2141	154.34	0.5139	0.2530	-0.0493	-0.0218	0.0635	0.0530	0.0049294	0.0049294	0.5625	472.
	-8.20	1.29	0.4002	0.041158	-0.020265	-0.003951	-0.001749	0.005249	0.004404	0.0129249	0.0129249	0.7876	5.0
9	-4.00	5.20	72.69	1475.	876.	-182.	-538.	195[illegible].	565.	18[illegible].7	650.9	98.0	
1	-18.34	0.2141	154.39	0.7089	0.2350	-0.0548	-0.0190	0.0756	0.0633	0.0056870	0.0056870	0.5625	472.
	-9.20	1.76	0.4004	0.056818	-0.018835	-0.004388	-0.001522	0.006255	0.005070	0.0130085	0.0130085	0.7877	7.0
10	-6.00	5.20	72.69	1015.	880.	-160.	-1102.	1972.	155.	185.2	653.6	99.0	
1	-25.46	0.2137	154.53	0.4944	0.2354	-0.0475	-0.0389	0.0779	0.0487	0.0057646	0.0057646	0.5643	474.
	-11.20	1.22	0.3990	0.039363	-0.018741	-0.003779	-0.003096	0.006204	0.003877	0.0131375	0.0131375	0.7895	7.0
11	-2.60	5.20	72.93	1875.	930.	-182.	-440.	1877.	312.	176.8	653.6	100.0	
1	-16.22	0.2133	154.93	0.8924	0.2596	-0.0526	-0.0135	0.0715	0.0543	0.0055151	0.0055151	0.5638	474.
	-7.80	2.11	0.4000	0.071409	-0.020774	-0.004206	-0.001234	0.005718	0.004346	0.0134789	0.0134789	0.7894	7.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	502.	11459.	11577.	15200.	3286.	3160.	9201.	9194.	0.000	511.	494.
TOTAL PHYS. UNITS..	0.0	25.1	57295.0	57885.0	15200.0	8215.0	7900.0	9201.0	9194.0	0.000	1409.	

Σ = 3 CP = C[illegible]

Best Available Copy

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

06/21/68
TIME 834.96

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.0 RUN 16

CONFIG. FRB

LOH HELICOPTER SKEWER TARE TAIL OFF

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1,0)(90)
1.	6.0	0.0	1.2	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0000000	0.0000000	0.000	0.000
2.	8.0	0.0	0.0	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	0.0000000	0.000	0.000
3.	10.0	0.0	0.5	0.087636	0.000035	0.010560	-0.000670	-0.000286	0.006359	0.0063589	***********	0.000	0.570
4.	10.9	0.0	0.8	0.097633	0.000141	0.000493	-0.000759	0.000755	0.007183	0.0071824	***********	[illegible]	0.569
5.	5.5	-2.6	-7.1	0.056151	-0.020767	-0.003929	0.004466	-0.001456	0.005355	0.0051467	0.0132481	0.400	0.789
6.	5.0	-3.3	-7.5	0.049265	-0.020565	-0.004042	0.004538	-0.001273	0.005105	0.0048351	0.0128980	0.400	0.788
7.	5.0	-1.5	-5.7	0.064098	-0.022247	-0.004041	0.004594	-0.000161	0.004697	0.0045755	0.0132200	0.401	0.788
8.	5.0	-4.0	-8.2	0.041158	-0.020265	-0.003951	0.004404	-0.001749	0.005249	0.0049294	0.0129249	0.400	0.788
9.	7.0	-4.0	-9.2	0.056818	-0.018835	-0.004388	0.005070	-0.001522	0.006955	0.0056870	0.0130085	0.400	0.788
10.	7.0	-6.0	-11.2	0.039363	-0.018741	-0.003779	0.003877	-0.003096	0.006204	0.0057646	0.0131375	0.399	0.790
11.	7.0	-2.6	-7.8	0.071409	-0.020774	-0.004276	0.004346	-0.001238	0.005718	0.0055151	0.0134789	0.400	0.789

TEST 316.0 RUN 17 STATIC 3

ROTOR SCALE DATA * PROGRAM LA5532 * WIND AXES

UPDATE = 6 17 68 1200 06/21/68 TIME 834.96

CONFIG. FRB

BAROMETRIC PRESSURE = 29.94

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / -CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQU	TEMP / M,DNR / M,AT	NOTES / RPM / THETA
1	[illegible]	4.05	72.50	1265.	937.	-169.	-321.	1562.	358.	140.1	646.8	82.0	
1	-23.86	0.2201	152.08	0.6084	0.2691	-0.0466	-0.0114	0.0555	0.0527	0.0043736	0.0043736	0.5671	469.
	-4.05	1.52	0.3969	0.047922	-0.021192	-0.003671	-0.000894	0.004374	0.004148	0.0126270	0.0126270	0.7922	4.5
2	-3.00	4.05	72.66	1195.	941.	-172.	-300.	1553.	352.	145.1	646.8	85.0	
1	-24.72	0.2188	152.68	0.5786	0.2664	-0.0489	-0.0106	0.0604	0.0553	0.0045552	0.0045552	0.5655	469.
	-7.05	1.44	0.3985	0.045933	-0.021144	-0.003885	-0.000839	0.004792	0.004392	0.0128362	0.0128362	0.7909	4.5
3	-3.00	4.35	72.59	1385.	932.	-189.	-406.	1612.	352.	150.1	646.8	85.0	
1	-21.49	0.2188	152.60	0.6673	0.2627	-0.0529	-0.0144	0.0624	0.0551	0.0047096	0.0047096	0.5655	469.
	-7.35	1.65	0.3983	0.052922	-0.020834	-0.004195	-0.001139	0.004945	0.004373	0.0128155	0.0128155	0.7907	5.0
4	-3.00	5.20	72.59	1265.	909.	-174.	-224.	1678.	278.	156.3	646.8	85.0	
1	-22.40	0.2188	152.60	0.6115	0.2520	-0.0501	-0.0079	0.0647	0.0525	0.0049048	0.0049048	0.5655	469.
	-8.20	1.53	0.3983	0.048493	-0.019985	-0.003973	-0.000627	0.005133	0.004167	0.0127033	0.0127033	0.7907	5.0
5	-3.00	6.30	72.52	1095.	919.	-166.	-819.	1692.	321.	157.1	646.8	89.0	
1	-25.78	0.2172	153.09	0.5326	0.2572	-0.0466	-0.0290	0.0651	0.0539	0.0049669	0.0049669	0.5635	469.
	-9.30	1.32	0.3995	0.042505	-0.020525	-0.003720	-0.002313	0.005199	0.004302	0.0130441	0.0130441	0.7886	5.0
6	-3.00	3.95	72.52	1555.	943.	-187.	-204.	1632.	325.	151.7	646.8	89.0	
1	-19.76	0.2172	153.09	0.7469	0.2684	-0.0564	-0.0072	0.0630	0.0540	0.0047973	0.0047973	0.5635	469.
	-6.95	1.82	0.3995	0.059606	-0.021418	-0.004500	-0.000575	0.005030	0.004312	0.0131120	0.0131120	0.7886	5.0
7	-3.00	3.20	72.71	1690.	963.	-196.	65.	1509.	435.	141.6	649.5	91.0	
1	-18.86	0.2164	153.57	0.8085	0.2762	-0.0599	0.0023	0.0588	0.0583	0.0044363	0.0044363	0.5648	471.
	-6.20	1.98	0.3991	0.064376	-0.021996	-0.004772	0.000183	0.004686	0.004645	0.0129317	0.0129317	0.7902	5.0
8	-3.00	4.70	72.68	1400.	934.	-183.	-566.	1601.	309.	155.6	649.5	92.0	
1	-21.32	0.2167	153.68	0.6738	0.2629	-0.0526	-0.02[illegible]	0.0642	0.0539	0.0048851	0.0048851	0.5643	471.
	-7.70	1.6[illegible]	0.3994	0.053736	-0.020968	-0.004193	-0.001594	0.005117	0.004295	0.0130624	0.0130624	0.7897	5.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	W	OMEGA	POW
TOTAL COUNTS..	0.	501.	11460.	11578.	15233.	3285.	3165.	9203.	9199.	9.500	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57300.0	57890.0	15233.0	8212.5	7911.3	9202.5	9199.0	0.237	1408.	

I = 3 CP = CQ.

Best Available Copy

ROTOR SCALE DATA * PROGRAM LA353C * WIND AXES

06/21/68
TIME 834.96

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.5 RUN 17

CONFIG. FRB

LOH HELICOPTER SKEWER TARE TAIL OFF

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)
1.	4.5	0.0	-4.0	0.047922	-0.021192	-0.003671	0.004148	-0.003894	0.004374	0.0043736	0.0126270	0.397	0.792
2.	4.5	-3.0	-7.0	0.045933	-0.021144	-0.003885	0.004392	-0.000839	0.004792	0.0045552	0.0128362	0.398	0.791
3.	5.0	-3.0	-7.3	0.052922	-0.020834	-0.004195	0.004373	-0.001139	0.004945	0.0047096	0.0128155	0.398	0.791
4.	5.0	-3.0	-8.2	0.048493	-0.019985	-0.003973	0.004167	-0.000627	0.005130	0.0049048	0.0127033	0.398	0.791
5.	5.0	-3.0	-9.3	0.042505	-0.020525	-0.003720	0.004302	-0.002313	0.005199	0.0049669	0.0130441	0.400	0.789
6.	5.0	-3.0	-6.9	0.059606	-0.021418	-0.004503	0.004312	-0.003575	0.005030	0.0047973	0.0131120	0.400	0.789
7.	5.0	-3.0	-6.2	0.064376	-0.021996	-0.004772	0.004645	0.000163	0.004686	0.0044363	0.0129317	0.399	0.790
8.	5.0	-3.0	-7.7	0.053736	-0.020968	-0.004193	0.004295	-0.001594	0.005117	0.0048851	0.0130624	0.399	0.790

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/21/68

TEST 316.0 RUN 18 STATIC 3 UPDATE = 6 17 68 1200 TIME 834.96

B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = 502.0, END VALUE = 501.0 COUNTS. END VALUE WILL BE USED.

BAROMETRIC PRESSURE = 29.94

CONFIG. FRB

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPQ	OMEGA*R / CQ / CQQ	TEMP / M,OMR / M,AT	NOTES / RPM / THETA
							26						
1	0.00	3.60	90.50	1085.	1278.	-167.	-174.	1396.	720.	235.5	648.1	73.0	
1	-26.84	0.2218	169.24	0.4994	0.2750	0.0154	-0.0049	0.0746	0.1102	0.0072448	0.0072448	0.5731	470.
	-3.60	1.15	0.4407	0.048506	-0.026708	0.001499	-0.003478	0.007245	0.010699	0.0188710	0.0188710	0.8257	2.5
							-22						
2	0.03	3.85	89.81	1125.	1264.	-174.	-197.	1392.	608.	229.7	648.1	73.0	
1	-28.11	0.2219	168.57	0.5144	0.2748	0.0134	-0.0056	0.0733	0.1050	0.0070665	0.0070665	0.5731	470.
	-3.85	1.19	0.4390	0.049565	-0.026481	0.001004	-0.000543	0.007366	0.010122	0.0185392	0.0185392	0.8247	1.4
							998						
3	-4.50	5.85	73.05	1590.	855.	-196.	-755.	2101.	342.	196.9	650.9	79.0	
1	-16.30	0.2212	152.26	0.7601	0.2223	-0.0606	-0.0265	0.0816	0.0563	0.0059982	0.0059982	0.5723	472.
	-10.35	1.87	0.3948	0.059244	-0.017326	-0.004725	-0.002068	0.006362	0.004387	0.0125971	0.0125971	0.7983	7.7
							907						
4	-4.50	5.60	73.08	1550.	865.	-190.	-786.	2045.	438.	191.3	650.9	82.0	
1	-17.30	0.2200	152.71	0.7414	0.2267	-0.0578	-0.0276	0.0797	0.0597	0.0058633	0.0058633	0.5707	472.
	-10.10	1.83	0.3960	0.058132	-0.017777	-0.004529	-0.002164	0.006247	0.004680	0.0126679	0.0126679	0.7967	7.7
							1436						
5	-6.20	5.60	73.10	1030.	853.	-174.	-980.	1904.	355.	177.6	650.9	82.0	
1	-23.73	0.2200	152.73	0.5001	0.2198	-0.0530	-0.0344	0.0759	0.0566	0.0054413	0.0054413	0.5707	472.
	-11.80	1.30	0.3961	0.039223	-0.017243	-0.004154	-0.002696	0.005956	0.004440	0.0121649	0.0121649	0.7968	7.7
							1474						
6	-7.30	5.70	73.05	830.	891.	-154.	-1627.	1709.	378.	156.5	645.4	83.0	
1	-30.20	0.2196	152.82	0.4065	0.2372	-0.0460	-0.0571	0.0695	0.0568	0.0049261	0.0049261	0.5654	468.
	-13.00	1.06	0.3997	0.032469	-0.018942	-0.003676	-0.004564	0.005547	0.004535	0.0124252	0.0124252	0.7913	7.7

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11460.	11576.	15206.	3286.	3162.	9203.	9200.	5.500	510.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57300.0	57880.0	15236.0	8215.0	7905.0	9202.5	9199.5	0.137	1407.	

T = 3 CP = CQ.

ROTOR SCALE DATA * PROGRAM LA353? * WIND AXES

06/21/68
TIME 834.96

AMES RESEARCH CENTER * ROTOR SCALE DATA

TEST 316.0 RUN 18

CONFIG. FRB

LOH HELICOPTER SKEWER TARE TAIL OFF

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)
1.	2.0	0.0	-3.6	0.048506	-0.026708	0.001499	0.019699	-0.000478	0.007245	0.0072448	0.0188710	0.441	0.826
2.	1.4	0.0	-3.8	0.049566	-0.026481	0.001004	0.010122	-0.000543	0.007066	0.0070665	0.0185392	0.439	0.825
3.	7.7	-4.5	-10.3	0.059244	-0.017326	-0.004725	0.004387	-0.002068	0.006362	0.0059982	0.0125971	0.395	0.798
4.	7.7	-4.5	-10.1	0.058132	-0.017777	-0.004529	0.004680	-0.002164	0.006247	0.0058603	0.0126679	0.396	0.797
5.	7.7	-6.2	-11.8	0.039223	-0.017243	-0.004154	0.004440	-0.002696	0.005956	0.0054413	0.0121649	0.396	0.797
6.	7.7	-7.3	-13.0	0.032469	-0.018942	-0.003676	0.004535	-0.004564	0.005547	0.0049261	0.0124252	0.405	0.791

ROTOR SCALE DATA * PROGRAM FSA013C * WIND AXES 05/23/69

TEST 316.0 RUN 19 STATIC 4 UPDATE = 4 26 69 1200 TIME 0.00

I DO NOT HAVE STATIC 4. I AM USING STATIC 5

CONFIG. JER

BAROMETRIC PRESSURE = 29.96

PT / AVG	ALPHA / ALFA* / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OF	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQO	TEMP / M,OMR / M,AT	NOTES / RPM / THETA
1	0.0	0.0	28.64	85.	338.	-10.	133.	202.	276.	17.7	637.1	84.0	
1	-75.90	0.2241	94.72	0.1003	0.3993	-0.0124	0.0120	0.0181	0.0248	0.0005684	0.0005684	0.5576	462.
	0.0	0.21	0.2509	0.003157	-0.012572	-0.000390	0.000376	0.000568	0.000780	0.0037222	0.0037222	0.6975	0.0
2	-3.00	0.0	28.52	55.	339.	-16.	-282.	233.	265.	19.3	637.1	84.0	
1	-80.80	0.2241	94.52	0.0652	0.4022	-0.0195	-0.0253	0.0213	0.0239	0.0006175	0.0006175	0.5576	462.
	-3.00	0.14	0.2504	0.002043	-0.012609	-0.000613	-0.000794	0.000658	0.000748	0.0037744	0.0037744	0.6972	0.0
3	-6.00	0.0	29.09	30.	341.	-13.	-547.	120.	229.	8.4	637.1	84.0	
1	-84.98	0.2240	95.47	0.0349	0.3966	-0.0157	-0.0483	0.0106	0.0202	0.0002688	0.0002688	0.5576	462.
	-6.00	0.08	0.2529	0.001114	-0.012687	-0.000502	-0.001544	0.000338	0.000645	0.0034776	0.0034776	0.6986	0.0
4	-8.00	0.0	28.55	-12.	338.	-16.	-705.	136.	308.	8.1	637.1	84.0	
1	-91.69	0.2241	94.64	-0.0118	0.4000	-0.0195	-0.0633	0.0122	0.0276	0.0002581	0.0002581	0.5576	462.
	-8.00	-0.03	0.2507	-0.000371	-0.012572	-0.000613	-0.001989	0.000383	0.000868	0.0034183	0.0034183	0.6974	0.0
5	-10.00	0.0	28.64	-30.	340.	-11.	-895.	33.	218.	4.7	637.1	72.0	
1	-95.04	0.2292	93.67	-0.0356	0.4017	-0.0136	-0.0802	0.0383	0.0195	0.0001483	0.0001483	0.5639	462.
	-10.00	-0.08	0.2482	-0.001090	-0.012368	-0.000418	-0.002469	0.000257	0.000602	0.0032172	0.0032172	0.7038	0.0
6	-12.00	0.0	28.64	-55.	343.	-16.	-1206.	209.	308.	12.3	637.1	72.0	
1	-99.10	0.2292	93.67	-0.0649	0.4052	-0.0195	-0.1090	0.0187	0.0276	0.0003869	0.0003869	0.5639	462.
	-12.00	-0.14	0.2482	-0.001938	-0.012476	-0.000599	-0.003327	0.000576	0.000848	0.0034825	0.0034825	0.7038	0.0
7	-13.00	0.0	28.66	-80.	347.	-20.	-1294.	140.	159.	8.9	637.1	72.0	
1	-102.96	0.2292	93.71	-0.0943	0.4096	-0.0242	-0.1158	0.0126	0.0143	0.0002787	0.0002787	0.5639	462.
	-13.00	-0.21	0.2483	-0.002606	-0.012622	-0.000745	-0.003568	0.000387	0.000439	0.0034112	0.0034112	0.7038	0.0
8	0.0	0.0	28.73	90.	341.	-10.	285.	177.	361.	15.6	637.1	72.0	
1	-75.24	0.2291	93.83	0.1158	0.4015	-0.0123	0.0255	0.0158	0.0322	0.0004887	0.0004887	0.5639	462.
	0.0	0.23	0.2486	0.003269	-0.012404	-0.000381	0.000787	0.000489	0.000996	0.0035709	0.0035709	0.7040	0.0
9	0.0	0.0	56.80	160.	202.	-11.	-66.	459.	387.	40.3	637.1	72.0	
1	-77.17	0.2261	132.81	0.0952	0.4178	-0.0068	-0.0030	0.0207	0.0175	0.0012823	0.0012823	0.5639	462.
	0.0	0.20	0.3519	0.005881	-0.025864	-0.000423	-0.000186	0.001282	0.001083	0.0103802	0.0103802	0.7622	0.0

Best Available Copy

10	-3.00	0.0	56.71	113.	696.	-44.	-555.	462.	627.	37.7	637.1	72.0	
1	-81.01	0.2261	132.70	0.0655	0.4143	-0.0265	-0.0251	0.0209	0.0281	0.0011985	0.0011985	0.5639	462.
	-3.00	0.14	0.3534	0.004050	-0.025605	-0.001638	-0.001551	0.001291	0.001730	0.0101991	0.0101991	0.7621	0.0
11	-5.30	0.0	57.22	55.	700.	-53.	-932.	387.	563.	29.4	637.1	73.0	
1	-85.50	0.2256	133.44	0.0325	0.4130	-0.0316	-0.0418	0.0174	0.0253	0.0009350	0.0009350	[illegible]	462.
	-5.30	0.07	0.3535	0.002029	-0.025808	-0.001974	-0.002612	0.001085	0.001578	0.0100582	0.0100582	0.7625	0.0
12	-8.40	0.0	56.85	-20.	711.	-56.	-1421.	439.	362.	33.5	637.1	73.0	
1	-91.61	0.2256	132.99	-0.0119	0.4228	-0.0330	-0.0641	0.0198	0.0164	0.0010671	0.0010671	0.5633	462.
	-8.40	-0.03	0.3523	-0.000738	-0.026246	-0.002047	-0.003980	0.001229	0.001015	0.0103143	0.0103143	0.7618	0.0
13	-10.00	0.0	57.03	-35.	705.	-49.	-1457.	431.	331.	32.3	637.1	73.0	
1	-92.84	0.2256	133.22	-0.0207	0.4179	-0.0293	-0.0655	0.0194	0.0149	0.0010289	0.0010289	0.5633	462.
	-10.00	-0.04	0.3525	-0.001291	-0.026027	-0.001826	-0.004080	0.001208	0.000928	0.0102143	0.0102143	0.7621	0.0
14	0.0	0.0	57.34	155.	708.	-22.	185.	509.	508.	44.7	637.1	73.0	
1	-77.66	0.2256	133.58	0.0913	0.4175	-0.0133	0.0083	0.0228	0.0227	0.0014267	0.0014267	0.5633	462.
	0.0	0.19	0.3535	0.005719	-0.026141	-0.000830	0.000517	0.001425	0.001423	0.0106732	0.0106732	0.7627	0.0
15	0.0	0.0	73.04	120.	928.	-33.	-151.	618.	729.	54.4	637.1	76.0	
1	-78.44	0.2226	151.77	0.0879	0.4295	-0.0159	-0.0053	0.0217	0.0256	0.0017547	0.0017547	0.5617	462.
	0.0	0.18	0.4071	0.007104	-0.034716	-0.001215	-0.000430	0.001755	0.002069	0.0157101	0.0157101	0.7876	0.0
16	-2.60	0.0	72.79	115.	924.	-54.	-574.	596.	632.	49.8	637.1	76.0	
1	-82.91	0.2226	151.50	0.0534	0.4291	-0.0253	-0.0202	0.0210	0.0223	0.0016083	0.0016083	0.5617	462.
	-2.60	0.11	0.4014	0.004259	-0.034562	-0.002037	-0.001629	0.001691	0.001794	0.0154789	0.0154789	0.7872	0.0
17	-5.70	0.0	72.70	55.	916.	-83.	-1232.	508.	651.	39.8	637.1	77.0	
1	-86.57	0.2222	151.54	0.0256	0.4259	-0.0383	-0.0435	0.0179	0.0230	0.0012830	0.0012830	[illegible]	462.
	-5.70	0.06	0.4015	0.002060	-0.034325	-0.003090	-0.003504	0.001444	0.001850	0.0150333	0.0150333	0.7865	0.0
18	-8.20	0.0	72.77	13.	926.	-55.	-1811.	414.	489.	30.0	637.1	78.0	
1	-89.38	0.2218	151.76	0.0046	0.4297	-0.0258	-0.0639	0.0146	0.0172	0.0009694	0.0009694	0.5607	462.
	-8.20	0.01	0.4020	0.000375	-0.034728	-0.002083	-0.005147	0.001180	0.001394	0.0149316	0.0149316	0.7861	0.0
19	-10.00	0.0	72.67	-40.	928.	-42.	-2093.	362.	400.	25.2	637.1	78.0	
1	-92.47	0.2218	151.66	-0.0186	0.4312	-0.0198	-0.0739	0.0128	0.0141	0.0008176	0.0008176	0.5607	462.
	-10.00	-0.04	0.4018	-0.001501	-0.034602	-0.001595	-0.005962	0.001031	0.001141	0.0148000	0.0148000	0.7860	0.0
20	0.0	0.0	72.60	190.	922.	-29.	33.	627.	650.	55.1	637.1	79.0	
1	-78.35	0.2214	151.72	0.0884	0.4288	-0.0137	0.0012	0.0221	0.0230	0.0017886	0.0017886	0.5602	462.
	0.0	0.18	0.4020	0.007142	-0.034639	-0.001109	0.000094	0.001789	0.001855	0.0157086	0.0157086	0.7853	0.0
21	0.0	0.0	56.59	165.	731.	-15.	-439.	488.	493.	42.8	637.1	79.0	
1	-77.29	0.2232	133.43	0.0985	0.4367	-0.0093	-0.0199	0.0221	0.0223	0.0013818	0.0013818	0.5602	462.
	0.0	0.20	0.3535	0.006154	-0.027284	-0.000578	-0.001243	0.001382	0.001395	0.0110235	0.0110235	0.7582	0.0

ZERO VALUES IN	ALPHA	Q 1	FL+	RL+	D	FL-	RL-	CF	CP	Q	OMEGA	POW
TOTAL COUNTS..	0.0	501.	11471.	11586.	15204.	3279.	3167.	9222.	9194.	6.000	519.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57355.0	57513.0	15204.5	9198.2	9218.7	9222.5	9194.0	0.150	1407.	

T = 3 CP = FQ.

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/19/68

TEST 316.0 RUN 20 STATIC 4 UPDATE = 6 20 68 1200 TIME 957.01

B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = 881.0, END VALUE = 504.0 COUNTS. END VALUE WILL BE USED.

I DO NOT HAVE STATIC 4. I AM USING STATIC 100

BAROMETRIC PRESSURE = 29.98

CONFIG. FRV

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/C,E	Q / V,KTS / V/CR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQO	TEMP / K,OMR / M,AT	NOTES / RPM / THETA
1	-3.00	-0.15	28.71	88.	354.	-21.	161.	233.	257.	0.0	0.0	64.0	
1	-76.12	0.2328	93.05	0.1030	0.4166	-0.0247	0.0144	0.0208	0.0230	0.0000000	0.0000000	0.0000	0.
	-2.85	0.25	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	-5.00	-0.15	57.17	33.	712.	-86.	-606.	518.	489.	0.0	0.0	68.0	
1	-87.39	0.2279	132.71	0.0192	0.4207	-0.0508	-0.0272	0.0232	0.0219	0.0000000	0.0000000	0.0000	0.
	-4.85	0.05	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-10.00	-0.15	56.99	-53.	741.	-66.	-976.	738.	301.	0.0	0.0	68.0	
1	-94.05	0.2279	132.49	-0.0311	0.4393	-0.0391	-0.0439	0.0332	0.0135	0.0000000	0.0000000	0.0000	0.
	-9.85	-0.07	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
4	-7.00	-0.15	57.03	13.	732.	-79.	-776.	717.	474.	0.0	0.0	74.0	
1	-89.02	0.2254	133.30	0.0074	0.4336	-0.0468	-0.0349	0.0322	0.0213	0.0000000	0.0000000	0.0000	0.
	-6.85	0.02	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
5	-5.00	-0.10	57.01	53.	735.	-72.	-928.	696.	416.	0.0	0.0	75.0	
1	-85.91	0.2249	133.39	0.0311	0.4356	-0.0427	-0.0417	0.0313	0.0187	0.0000000	0.0000000	0.0000	0.
	-4.90	0.07	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
6	-3.00	-0.10	57.03	108.	735.	-45.	-467.	603.	551.	0.0	0.0	75.0	
1	-81.68	0.2249	133.42	0.0637	0.4354	-0.0267	-0.0210	0.0271	0.0248	0.0000000	0.0000000	0.0000	0.
	-2.90	0.15	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
7	0.00	-0.10	57.03	158.	739.	-17.	-183.	545.	532.	0.0	0.0	76.0	
1	-77.97	0.2245	133.55	0.0933	0.4377	-0.0101	-0.0082	0.0245	0.0239	0.0000000	0.0000000	0.0000	0.
	0.10	0.21	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
8	3.00	-0.10	57.10	183.	751.	-7.	336.	581.	522.	0.0	0.0	76.0	
1	-76.34	0.2245	133.63	0.1080	0.4443	-0.0041	0.0151	0.0261	0.0235	0.0000000	0.0000000	0.0000	0.
	3.10	0.24	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
9	-13.00	-0.10	28.85	-93.	366.	-1.	-469.	394.	49.	0.0	0.0	77.0	
1	-104.18	0.2272	94.43	-0.1083	0.4286	-0.0012	-0.0417	0.0164	0.0061	0.0000000	0.0000000	0.0000	0.
	-12.90	-0.25	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
10	-11.00	-0.10	28.88	[illegible]	362.	-18.	-329.	[illegible]	220.	0.0	0.0	77.0	

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1	-100.56	0.2271	54.47	-0.0790	0.4235	-0.0311	-0.0293	0.0301	0.0194	0.0000000	0.0000000	0.0000	0.
	-10.90	-0.19	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
11	-5.00	-0.10	28.88	-38.	358.	-23.	-278.	308.	183.	0.0	0.0	76.0	
1	-95.98	0.2276	94.38	-0.0439	0.4186	-0.0269	-0.0247	0.0274	0.0162	0.0000000	0.0000000	0.0000	0.
	-8.90	-0.10	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
12	-7.00	-0.10	28.92	-13.	359.	-28.	-270.	375.	103.	0.0	0.0	76.0	
1	-91.99	0.2276	94.46	-0.0146	0.4193	-0.0327	-0.0239	0.0333	0.0092	0.0000000	0.0000000	0.0000	0.
	-6.90	-0.03	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
13	-5.00	-0.10	28.92	3.	359.	-23.	-217.	332.	98.	0.0	0.0	76.0	
1	-89.60	0.2276	94.46	0.0029	0.4193	-0.0269	-0.0192	0.0295	0.0087	0.0000000	0.0000000	0.0000	0.
	-4.90	0.01	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
14	-3.00	-0.10	28.92	38.	357.	-22.	12.	295.	368.	0.0	0.0	76.0	
1	-84.00	0.2276	94.46	0.0438	0.4170	-0.0257	0.0011	0.0261	0.0326	0.0000000	0.0000000	0.0000	0.
	-2.90	0.11	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
15	0.00	0.05	28.90	68.	360.	-12.	39.	258.	231.	0.0	0.0	76.0	
1	-79.38	0.2276	94.42	0.0789	0.4208	-0.0140	0.0035	0.0229	0.0205	0.0000000	0.0000000	0.0000	0.
	-0.05	0.19	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
16	3.00	0.00	28.90	103.	373.	-14.	33.	261.	284.	0.0	0.0	73.0	
1	-74.63	0.2271	94.51	0.1198	0.4360	-0.0164	0.0030	0.0231	0.0252	0.0000000	0.0000000	0.0000	0.
	3.00	0.27	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	+D	FL-	RL-	CF	CR	Q	OMEGA	PUW
TOTAL COUNTS..	0.	504.	11461.	11383.	15202.	3273.	3176.	9203.	9197.	3.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.2	57405.0	[illegible]	15202.0	8182.5	7940.0	9203.0	9197.0	0.075	1489.	

T = 3 CP = CQ.

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ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/19/66

TEST 316.0 RUN 21 STATIC 4 UPDATE = 6 20 66 1200 TIME 957.01

B1'S DIFFER ON BEGINNING AND END ZEROES. BEGINNING VALUE = ~~882.0~~, END VALUE = ~~901.0 COUNTS~~. END VALUE WILL BE USED.

I DO NOT HAVE STATIC 4. I AM USING STATIC 100

BAROMETRIC PRESSURE = 29.98

CONFIG. FRVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1	3.00	0.05	28.96	170.	375.	-41.	-968.	652.	158.	0.0	0.0	78.0	
1	-65.58	0.2267	94.70	0.1983	0.4369	-0.0472	-0.0858	0.0578	0.0140	0.0000000	0.0000000	0.0000	0.
	2.95	0.45	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	0.00	0.05	29.01	110.	365.	-19.	-596.	479.	128.	0.0	0.0	79.0	
1	-73.21	0.2263	94.86	0.1281	0.4245	-0.0215	-0.0527	0.0424	0.0113	0.0000000	0.0000000	0.0000	0.
	-0.05	0.30	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-3.00	0.05	29.10	20.	362.	-15.	-354.	304.	276.	0.0	0.0	79.0	
1	-86.83	0.2263	95.02	0.0232	0.4197	-0.0168	-0.0312	0.0268	0.0243	0.0000000	0.0000000	0.0000	0.
	-3.05	0.06	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
4	-5.00	0.00	28.77	-10.	357.	-13.	-9.	180.	308.	0.0	0.0	80.0	
1	-91.61	0.2259	94.56	-0.0117	0.4186	-0.0147	-0.0008	0.0160	0.0275	0.0000000	0.0000000	0.0000	0.
	-5.00	-0.03	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
5	-7.00	0.00	29.01	-70.	359.	-5.	207.	48.	393.	0.0	0.0	80.0	
1	-101.05	0.2259	94.95	-0.0815	0.4175	-0.0052	0.0183	0.0043	0.0348	0.0000000	0.0000000	0.0000	0.
	-7.00	-0.20	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
6	-9.00	0.00	28.84	-105.	362.	-1.	432.	-30.	288.	-0.0	0.0	80.0	
1	-106.20	0.2259	94.68	-0.1230	0.4235	-0.0006	0.0384	-0.0027	0.0256	-0.0000000	-0.0000000	0.0000	0.
	-9.00	-0.29	0.0000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
7	-11.00	0.00	28.84	-160.	367.	14.	640.	-217.	553.	-0.0	0.0	80.0	
1	-113.58	0.2259	94.68	-0.1874	0.4293	0.0158	0.0569	-0.0193	0.0492	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.44	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
8	-13.00	0.00	28.77	-215.	376.	18.	902.	-198.	617.	-0.0	0.0	80.0	
1	-119.79	0.2259	94.56	-0.2525	0.4409	0.0205	0.0804	-0.0176	0.0550	-0.0000000	-0.0000000	0.0000	0.
	-13.00	-0.57	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
9	3.00	0.00	57.07	295.	756.	-58.	-2026.	1319.	13.	0.0	0.0	81.0	
1	-68.67	0.2224	134.21	0.1746	0.4472	-0.0340	-0.0911	0.0593	0.0006	0.0000000	0.0000000	0.0000	0.
	3.00	0.39	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
10	0.00	0.00	57.05	195.	742.	-42.	-1317.	958.	268.	0.0	0.0	[illegible]	

1	-75.27	0.2216	134.43	0.1155	0.4391	-0.0246	-0.0892	0.0431	0.0121	0.0000000	0.0000000	0.0000	0.
	0.00	0.26	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
11	-3.00	0.00	57.16	75.	728.	-47.	-731.	562.	527.	0.0	0.0	83.0	
1	-84.11	0.2216	134.57	0.0443	0.4300	-0.0275	-0.0328	0.0252	0.0234	0.0000000	0.0000000	0.0000	0.
	-3.00	0.10	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
12	-5.00	0.00	57.16	-5.	730.	-42.	-479.	397.	607.	0.0	0.0	83.0	
1	-90.39	0.2216	134.57	-0.0030	0.4312	-0.0245	-0.0215	0.0178	0.0272	0.0000000	0.0000000	0.0000	0.
	-5.00	-0.01	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
13	-7.00	0.00	57.18	-75.	729.	-44.	154.	229.	702.	0.0	0.0	83.0	
1	-95.88	0.2216	134.60	-0.0443	0.4304	-0.0257	0.0069	0.0103	0.0315	0.0000000	0.0000000	0.0000	0.
	-7.00	-0.10	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
14	-10.00	0.00	56.98	-235.	752.	-2.	638.	-114.	821.	-0.0	0.0	83.0	
1	-107.36	0.2216	134.35	-0.1393	0.4456	-0.0009	0.0287	-0.0051	0.0370	-0.0000000	-0.0000000	0.0000	0.
	-10.00	-0.31	0.0000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11481.	11584.	15203.	3270.	3177.	9203.	9195.	3.500	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	57402.5	57917.5	15202.5	8178.8	7942.5	9202.5	9195.0	0.087	1409.	

T = 3 CP = CQ.

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ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES 06/19/68

TEST 316.0 RUN 22 STATIC 4 UPDATE = 6 20 68 1200 TIME 957.01

BEGINNING ZERO ONLY

I DO NOT HAVE STATIC 4. I AM USING STATIC 100

BAROMETRIC PRESSURE = 29.90

CONFIG. FVH

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/CR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1	3.00	0.00	28.81	160.	314.	-55.	-1197.	639.	53.	0.0	0.0	82.0	
1	-63.00	0.2245	94.92	0.1877	0.3683	-0.0645	-0.1066	0.0569	0.0047	0.0000000	0.0000000	0.0000	0.
	3.00	0.51	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	0.00	0.00	28.81	105.	310.	-28.	-592.	497.	-24.	0.0	0.0	82.0	
1	-71.29	0.2245	94.92	0.1231	0.3636	-0.0328	-0.0528	0.0442	-0.0021	0.0000000	0.0000000	0.0000	0.
	0.00	0.34	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-3.00	0.00	28.64	15.	305.	-24.	-298.	273.	167.	0.0	0.0	82.0	
1	-87.18	0.2245	94.64	0.0177	0.3598	-0.0283	-0.0267	0.0244	0.0150	0.0000000	0.0000000	0.0000	0.
	-3.00	0.05	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
4	-5.00	0.00	29.09	-20.	311.	-16.	8.	166.	252.	0.0	0.0	82.0	
1	-93.68	0.2244	95.39	-0.0232	0.3612	-0.0186	0.0007	0.0146	0.0222	0.0000000	0.0000000	0.0000	0.
	-5.00	-0.06	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
5	-7.00	0.00	29.07	-65.	312.	-13.	303.	28.	300.	0.0	0.0	82.0	
1	-101.77	0.2244	95.35	-0.0755	0.3626	-0.0151	0.0267	0.0025	0.0265	0.0000000	0.0000000	0.0000	0.
	-7.00	-0.21	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
6	-10.00	0.00	28.99	-130.	313.	3.	794.	-162.	428.	-0.0	0.0	83.0	
1	-112.55	0.2240	95.32	-0.1515	0.3647	0.0035	0.0702	-0.0143	0.0379	-0.0000000	-0.0000000	0.0000	0.
	-10.00	-0.42	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
7	-11.00	0.00	28.71	-150.	313.	7.	990.	-167.	365.	-0.0	0.0	83.0	
1	-115.61	0.2240	94.85	-0.1765	0.3683	0.0082	0.0885	-0.0149	0.0326	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.48	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
8	-13.00	-0.20	28.71	-210.	318.	18.	1287.	-363.	583.	-0.0	0.0	83.0	
3	-123.44	0.2240	94.85	-0.2471	0.3742	0.0212	0.1150	-0.0324	0.0521	-0.0000000	-0.0000000	0.0000	0.
	-12.80	-0.66	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
9	3.00	0.00	57.06	290.	639.	-85.	-1030.	1285.	-87.	0.0	0.0	83.0	
1	-65.59	0.2210	134.63	0.1717	0.3784	-0.0503	-0.0823	0.0578	-0.0039	0.0000000	0.0000000	0.0000	0.
	3.00	0.45	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0
10	0.00	0.00	56.94	170.	626.	-74.	-1110.	942.	-30.	0.0	0.0	83.0	

1	-74.81	0.2210	134.49	[illegible]	0.3724	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.
	0.00	0.27	0.0000	0.000000	-0.000000	[illegible]	-0.000000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.0
11	-3.00	0.00	56.69	55.	620.	-64.	[illegible]	340.	290.	0.0	0.0	83.6	
1	-84.93	0.2210	134.18	0.0328	0.3695	[illegible]	[illegible]	0.0244	[illegible]	[illegible]	[illegible]	[illegible]	0.
	-3.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	-5.50	-28.90	56.99	-55.	629.	-68.	-42.	336.	396.	0.0	0.0	83.0	
1	-95.00	0.2210	134.54	-0.0326	0.3729	-0.0403	[illegible]	0.0147	0.0178	[illegible]	[illegible]	[illegible]	0.
	23.40	-0.09	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	[illegible]	0.000000	[illegible]	[illegible]	[illegible]	0.0
13	-7.00	-0.60	57.01	-110.	632.	-69.	359.	193.	337.	0.0	0.0	83.0	
1	-99.87	0.2210	134.57	-0.0652	0.3745	-0.0409	0.0161	0.0087	0.0152	0.0000000	0.0000000	0.0000	0.
	-6.40	-0.17	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
14	-10.00	0.05	56.87	-230.	646.	-18.	1007.	-76.	685.	-0.0	0.0	83.0	
1	-109.60	0.2210	134.40	-0.1366	0.3830	-0.0107	0.0454	-0.0034	0.0309	-0.0000000	-0.0000000	0.0000	0.
	-10.05	-0.36	0.0000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
15	0.00	-28.90	57.01	170.	627.	-75.	-1137.	907.	-12.	0.0	0.0	88.8	
1	-74.83	0.2190	135.19	0.1007	0.3716	-0.0444	-0.0511	0.0408	-0.0005	0.0000000	0.0000000	0.0000	0.
	26.90	0.27	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	E	FL-	RL-	CF	CR	Q	OMEGA	ROW
TOTAL COUNTS..	0.	579.	11490.	11595.	15202.	3267.	3189.	9203.	9198.	0.000	511.	495.
TOTAL PHYS. UNITS..	0.0	28.9	57450.0	57975.0	15202.0	8167.5	7972.5	9203.0	9198.0	0.200	1409.	

I = 3 CP = CQ.

ROTOR SCALE DATA • PROGRAM LA3530 • WIND AXES 06/19/68

TEST 316.0 RUN 23 STATIC 4 UPDATE = 6 20 68 1200 TIME 957.01

I DO NOT HAVE STATIC 4. I AM USING STATIC 100

BAROMETRIC PRESSURE = 29.89

CONFIG. FV

PT / AVG	ALPHA / ALFA' / ALF C	B 1 / RHO*100 / L/D,E	Q / V,KTS / V/OR	LIFT,U / CL / CLR	DRAG,U / CD / CXR	SIDE F,U / CY / CYR	PITCH,U / CM / CMY	YAW,U / CN / CMZ	ROLL,U / CROLL / CMX	HP / CP / CPO	OMEGA*R / CQ / CQO	TEMP / M,OMR / M,AT	NOTES / RPM / THETA
1	3.00	0.00	57.24	138.	621.	-32.	240.	471.	555.	0.0	0.0	88.0	
1	-77.52	0.2189	135.50	0.3811	0.3665	-0.0186	0.0108	0.0211	0.0249	0.0000000	0.0000000	0.0000	0.
	3.00	0.22	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	0.00	0.00	57.03	78.	612.	-32.	106.	471.	428.	0.0	0.0	88.0	
1	-82.78	0.2189	135.24	0.0459	0.3625	-0.0187	0.0048	0.0212	0.0192	0.0000000	0.0000000	0.0000	0.
	0.00	0.13	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-3.00	0.00	56.89	38.	608.	-63.	-517.	447.	568.	0.0	0.0	89.0	
1	-86.47	0.2185	135.20	0.0223	0.3610	-0.0371	-0.0233	0.0202	0.0256	0.0000000	0.0000000	0.0000	0.
	-3.00	0.06	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
4	-5.00	0.00	57.06	-3.	618.	-83.	-547.	471.	460.	0.0	0.0	89.0	
1	-90.23	0.2185	135.39	-0.0015	0.3659	-0.0488	-0.0246	0.0212	0.0207	0.0000000	0.0000000	0.0000	0.
	-5.00	-0.00	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
5	-7.00	0.00	56.87	-43.	620.	-95.	-848.	632.	480.	0.0	0.0	90.0	
1	-93.92	0.2181	135.29	-0.0252	0.3683	-0.0561	-0.0382	0.0285	0.0217	0.0000000	0.0000000	0.0000	0.
	-7.00	-0.07	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
6	-9.00	0.00	57.08	-83.	630.	-85.	-879.	669.	471.	0.0	0.0	90.0	
1	-97.46	0.2181	135.55	-0.0488	0.3729	-0.0500	-0.0395	0.0300	0.0212	0.0000000	0.0000000	0.0000	0.
	-9.00	-0.13	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
7	-11.00	0.00	56.92	-118.	631.	-57.	-1242.	489.	198.	0.0	0.0	90.0	
1	-100.55	0.2181	135.35	-0.0697	0.3745	-0.0335	-0.0560	0.0220	0.0089	0.0000000	0.0000000	0.0000	0.
	-11.00	-0.19	0.0000	-0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
8	-1.00	0.00	57.13	73.	613.	-35.	-152.	535.	251.	0.0	0.0	90.0	
1	-83.25	0.2181	135.60	0.0429	0.3625	-0.0204	-0.0068	0.0240	0.0114	0.0000000	0.0000000	0.0000	0.
	-1.00	0.12	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
9	1.00	0.00	56.96	98.	616.	-36.	-36.	427.	533.	0.0	0.0	91.0	
1	-81.01	0.2177	135.53	0.0578	0.3653	-0.0211	-0.0016	0.0192	0.0240	0.0000000	0.0000000	0.0000	0.
	1.00	0.16	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	PCN
TOTAL COUNTS..	0.	501.	11691.	11597.	15285.	3285.	3160.	[illegible]	9197.	[illegible]	511.	[illegible]

Best Available

TEST 316.0 RUN 34 STATIC 3 [illegible]
BEGINNING ZERO ONLY

SUPPORT TARE CONFIG. FVHK

BAROMETRIC PRESSURE = 29.85

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OHR M,AT	NOTES RPM THETA
1	0.00	0.00	28.47	135.	435.	-3.	222.	308.	-90.	0.0	0.0	590.0	
1	-72.76	0.1160	131.25	0.1602	0.5161	-0.0036	0.0200	0.0278	-0.0081	0.0000000	0.0000000	0.0000	0.
	0.00	0.31	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0
2	-3.00	0.00	28.62	60.	431.	3.	900.	179.	90.	0.0	0.0	590.0	
1	-82.07	0.1160	131.58	0.0708	0.5088	0.0035	0.0807	0.0161	0.0081	0.0000000	0.0000000	0.0000	0.
	-3.00	0.14	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-5.00	0.00	28.76	40.	430.	3.	850.	155.	90.	0.0	0.0	590.0	
1	-84.69	0.1160	131.91	0.0470	0.5051	0.0035	0.0758	0.0138	0.0080	0.0000000	0.0000000	0.0000	0.
	-5.00	0.09	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
4	-7.00	0.00	28.78	-10.	428.	12.	1336.	-14.	234.	-0.0	0.0	590.0	
1	-91.34	0.1160	131.97	-0.0117	0.5024	0.0141	0.1191	-0.0013	0.0208	-0.0000000	-0.0000000	0.0000	0.
	-7.00	-0.02	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
5	-9.00	0.00	28.83	-65.	430.	29.	1621.	-169.	378.	-0.0	0.0	590.0	
1	-98.60	0.1160	132.08	-0.0762	0.5039	0.0340	0.1443	-0.0150	0.0336	-0.0000000	-0.0000000	0.0000	0.
	-9.00	-0.15	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
6	-11.00	0.00	29.02	-125.	429.	59.	1891.	-351.	687.	-0.0	0.0	600.0	
1	-106.24	0.1149	133.15	-0.1455	0.4994	0.0687	0.1672	-0.0311	0.0607	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.29	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
7	-13.00	0.00	28.78	-155.	426.	55.	2295.	-347.	750.	-0.0	0.0	610.0	
1	-109.99	0.1139	133.22	-0.1819	0.5000	0.0646	0.2045	-0.0309	0.0668	-0.0000000	-0.0000000	0.0000	0.
	-13.00	-0.36	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
8	0.00	0.00	54.33	205.	660.	-25.	585.	969.	-60.	0.0	0.0	610.0	
1	-76.59	0.1135	184.17	0.1275	0.5347	-0.0155	0.0276	0.0457	-0.0028	0.0000000	0.0000000	0.0000	0.
	0.00	0.24	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0
9	-3.00	0.00	54.38	110.	851.	-17.	1271.	447.	152.	0.0	0.0	640.0	
1	-82.63	0.1094	186.81	0.0683	0.5287	-0.0106	0.0600	0.0211	0.0072	0.0000000	0.0000000	0.0000	0.
	-3.00	0.13	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
10	-5.00	0.00	54.47	45.	846.	-20.	1488.	146.	569.	0.0	0.0	650.0	
1	-86.96	0.1084	187.83	0.0279	0.5247	-0.0124	0.0700	0.0069	0.0268	0.0000000	0.0000000	0.0000	0.
	-5.00	0.05	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
11	-7.00	0.00	54.24	-35.	847.	8.	1789.	-156.	339.	-0.0	0.0	650.0	
1	-92.37	0.1084	187.41	-0.0218	0.5276	0.0050	0.0846	-0.0074	0.0160	-0.0000000	-0.0000000	0.0000	0.
	-7.00	-0.04	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
12	-9.00	0.00	54.40	-100.	846.	41.	2491.	-427.	738.	-0.0	0.0	670.0	
1	-96.74	0.1065	189.39	-0.0621	0.5253	0.0255	0.1175	-0.0201	0.0348	-0.0000000	-0.0000000	0.0000	0.
	-9.00	-0.12	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
13	-11.00	0.00	54.38	-210.	845.	50.	3092.	-694.	1177.	-0.0	0.0	680.0	
1	-103.91	0.1056	190.18	-0.1305	0.5268	0.0311	0.1459	-0.0327	0.0555	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.25	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS	0.	501.	11361.	11491.	18204.	3873.	3164.	9206.	9200.	3.000	511.	495.
TOTAL [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]10.0	[illegible]	9200.0	[illegible]	1459.	

Best Available Copy

BAROMETRIC PRESSURE = 29.97 SUPPORT TARE CONFIG. EVK

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/DR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CNZ	ROLL,U CROLL CNX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OHR M,AT	NOTES RPM THETA
1	0.00	0.00	28.88	105.	430.	5.	408.	274.	143.	0.0	0.0	69.0	
1	-75.28	0.2305	93.78	0.1228	0.5031	0.0058	0.0362	0.0244	0.0127	0.0000000	0.0000000	0.0000	0.
	0.00	0.24	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	-3.00	0.00	28.95	65.	429.	10.	416.	134.	130.	0.0	0.0	69.0	
1	-81.38	0.2305	93.90	0.0759	0.5007	0.0117	0.0369	0.0119	0.0123	0.0000000	0.0000000	0.0000	0.
	-3.00	0.15	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-5.00	0.00	29.02	25.	424.	23.	300.	-40.	92.	-0.0	0.0	69.0	
1	-86.63	0.2305	94.01	0.0291	0.4936	0.0268	0.0265	-0.0035	0.0081	-0.0000000	-0.0000000	0.0000	0.
	-5.00	0.06	0.0000	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
4	-7.00	0.00	28.97	25.	421.	16.	65.	29.	107.	0.0	0.0	70.0	
1	-86.60	0.2301	94.02	0.0292	0.4909	0.0187	0.0057	0.0026	0.0095	0.0000000	0.0000000	0.0000	0.
	-7.00	0.06	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
5	-9.00	0.00	28.88	15.	423.	28.	-119.	64.	172.	0.0	0.0	70.0	
1	-87.97	0.2301	93.87	0.0175	0.4949	0.0328	-0.0105	0.0057	0.0152	0.0000000	0.0000000	0.0000	0.
	-9.00	0.04	0.0000	0.000000	-0.000000	0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
6	-11.00	0.00	28.97	-25.	424.	26.	-55.	17.	182.	0.0	0.0	70.0	
1	-93.37	0.2301	94.02	-0.0292	0.4944	0.0303	-0.0049	0.0015	0.0161	0.0000000	0.0000000	0.0000	0.
	-11.00	-0.06	0.0000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
7	-13.00	0.00	28.95	-40.	422.	18.	-31.	125.	139.	0.0	0.0	70.0	
1	-95.41	0.2301	93.99	-0.0467	0.4925	0.0210	-0.0027	0.0110	0.0123	0.0000000	0.0000050	0.0000	0.
	-13.00	-0.09	0.0000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
8	0.00	0.00	54.31	145.	843.	-9.	1141.	486.	343.	0.0	0.0	71.0	
1	-80.24	0.2268	129.65	0.0902	0.5244	-0.0056	0.0539	0.0230	0.0162	0.0000000	0.0000000	0.0000	0.
	0.00	0.17	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
9	-3.00	0.00	54.26	120.	840.	-15.	775.	225.	36.	0.0	0.0	72.0	
1	-81.87	0.2264	129.71	0.0747	0.5230	-0.0093	0.0366	0.0106	0.0017	0.0000000	0.0000000	0.0000	0.
	-3.00	0.14	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
10	-5.00	0.00	54.38	80.	841.	-20.	341.	268.	125.	0.0	0.0	73.0	
1	-84.57	0.2260	129.98	0.0497	0.5225	-0.0124	0.0161	0.0126	0.0059	0.0000000	0.0000000	0.0000	0.
	-5.00	0.10	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
11	-7.00	0.00	54.36	55.	842.	-12.	135.	209.	253.	0.0	0.0	74.0	
1	-86.26	0.2256	130.07	0.0342	0.5233	-0.0075	0.0059	0.0099	0.0119	0.0000000	0.0000000	0.0000	0.
	-7.00	0.07	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
12	-9.00	0.00	54.45	10.	830.	-10.	134.	256.	73.	0.0	0.0	76.0	
1	-89.31	0.2247	130.43	0.0062	0.5150	-0.0062	0.0063	0.0121	0.0034	0.0000000	0.0000000	0.0000	0.
	-9.00	0.01	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
13	-11.00	0.00	54.43	-20.	834.	15.	101.	67.	-36.	0.0	0.0	77.0	
1	-91.37	0.2243	130.52	-0.0124	0.5177	0.0093	0.0048	0.0032	-0.0017	0.0000000	0.0000000	0.0000	0.
	-11.00	-0.02	0.0000	-0.000000	-0.000000	0.000000	0.000000	0.000000	-0.000000	0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	ZF	CR	Q	OMEGA	PGW
TOTAL COUNTS..	0.	501.	11363.	11491.	15204.	3264.	3171.	9203.	9194.	1.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	54815.0	57455.0	15204.0	8158.8	7927.5	9203.0	9194.0	0.025	1409.	

TEST 316.0 RUN 26 STATIC 7 UPDATE = 6 10 68 1200 TIME 935.83

BAROMETRIC PRESSURE = 29.97

SUPPORT TARE CONFIG. FV

PT AVG	ALPHA ALFA' ALF C	B 1 RHO*100 L/D,E	Q V,KTS V/GR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OMR M,AT	NOTES RPM THETA
1 1	0.00 -78.66 0.00	0.00 0.2279 0.20	28.99 94.51 0.0000	70. 0.0816 0.000000	349. 0.4066 -0.000000	6. 0.0064 0.000000	524. 0.0464 0.000000	231. 0.0204 0.000000	151. 0.0134 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	75.0 0.0000 0.0000	0. 0.0
2 1	-3.00 -83.39 -3.00	0.00 0.2280 0.12	28.54 93.76 0.0000	40. 0.0473 0.000000	345. 0.4083 -0.000000	5. 0.0053 0.000000	237. 0.0213 0.000000	220. 0.0198 0.000000	220. 0.0197 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	75.0 0.0000 0.0000	0. 0.0
3 1	-5.00 -85.00 -5.00	0.00 0.2279 0.09	29.04 94.58 0.0000	30. 0.0349 0.000000	343. 0.3990 -0.000000	2. 0.0017 0.000000	-34. -0.0030 -0.000000	187. 0.0165 0.000000	214. 0.0189 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	75.0 0.0000 0.0000	0. 0.0
4 1	-7.00 -89.16 -7.00	0.00 0.2279 0.01	29.02 94.55 0.0000	5. 0.0058 0.000000	342. 0.3982 -0.000000	19. 0.0215 0.000000	-58. -0.0051 -0.000000	130. 0.0115 0.000000	-22. -0.0020 -0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	75.0 0.0000 0.0000	0. 0.0
5 1	-9.00 -93.39 -9.00	0.00 0.2275 -0.06	29.16 94.87 0.0000	-20. -0.0232 -0.000000	338. 0.3916 -0.000000	17. 0.0191 0.000000	5. 0.0004 0.000000	181. 0.0159 0.000000	200. 0.0176 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	76.0 0.0000 0.0000	0. 0.0
6 1	-11.00 -99.30 -11.00	0.00 0.2275 -0.16	28.71 94.12 0.0000	-55. -0.0647 -0.000000	336. 0.3954 -0.000000	22. 0.0253 0.000000	-439. -0.0392 -0.000000	41. 0.0037 0.000000	26. 0.0023 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	76.0 0.0000 0.0000	0. 0.0
7 1	-13.00 -103.20 -13.00	0.00 0.2275 -0.23	28.99 94.59 0.0000	-80. -0.0932 -0.000000	341. 0.3973 -0.000000	-6. -0.0064 -0.000000	-278. -0.0246 -0.000000	256. 0.0227 0.000000	103. 0.0091 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	76.0 0.0000 0.0000	0. 0.0
8 1	0.00 -81.22 0.00	0.00 0.2247 0.15	54.19 130.11 0.0000	105. 0.0655 0.000000	680. 0.4239 -0.000000	-3. -0.0047 -0.000000	786. 0.0372 0.000000	430. 0.0203 0.000000	282. 0.0133 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	76.0 0.0000 0.0000	0. 0.0
9 1	-3.00 -84.86 -3.00	0.00 0.2235 0.09	54.38 130.71 0.0000	60. 0.0373 0.000000	667. 0.4144 -0.000000	-20. -0.0121 -0.000000	363. 0.0171 0.000000	27[illegible]. 0.0129 0.000000	175. 0.0083 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	79.0 0.0000 0.0000	0. 0.0
10 1	-5.00 -87.85 -5.00	0.00 0.2231 0.04	54.38 130.83 0.0000	25. 0.0155 0.000000	664. 0.4137 -0.000000	-26. -0.0158 -0.000000	190. 0.0090 0.000000	305. 0.0144 0.000000	249. 0.0117 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	80.0 0.0000 0.0000	0. 0.0
11 1	-7.00 -90.00 -7.00	0.00 0.2227 -0.00	54.29 130.83 0.0000	0. -0.0000 -0.000000	661. 0.4113 -0.000000	-31. -0.0190 -0.000000	-48. -0.0023 -0.000000	201. 0.0095 0.000000	296. 0.0140 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	81.0 0.0000 0.0000	0. 0.0
12 1	-9.00 -94.33 -9.00	0.00 0.2226 -0.08	54.38 130.95 0.0000	-50. -0.0311 -0.000000	661. 0.4106 -0.000000	-17. -0.0103 -0.000000	35. 0.0016 0.000000	160. 0.0075 0.000000	223. 0.0105 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	81.0 0.0000 0.0000	0. 0.0
13 1	-11.00 -97.86 -11.00	0.00 0.2227 -0.14	54.31 130.86 0.0000	-90. -0.0560 -0.000000	652. 0.4056 -0.000000	-34. -0.0208 -0.000000	24. 0.0011 0.000000	266. 0.0126 0.000000	164. 0.0077 0.000000	0.0 0.0000000 0.0000000	0.0 0.0000000 -0.0000000	81.0 0.0000 0.0000	0. 0.0

ZERO VALUES IN	ALPHA	B 1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11400.	11522.	15202.	3251.	3188.	9203.	9200.	2.000	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	56997.5	57607.5	15202.0	[illegible]	7968.0	9202.5	9200.0	[illegible]	[illegible]	

ROTOR SCALE DATA P PROGRAM LA3530 A WIND AXES 01/24/69
TEST 316.0 RUN 27 STATIC 8 UPDATE 10 68 1200 TIME 827
STATIC NO. CHANGES FROM 8 TO ... OF PT ... FIRST STATIC ENCOUNTERED IS THE ONE ACTUALLY USED.
(IF A STATIC IS STARTING HERE, IT WILL BE SCRAMBLED WITH THE RUN BECAUSE K STILL = 1. LATER CHANGE TO K=9 WON'T HELP.)

BAROMETRIC PRESSURE = 29.94

SUPPORT TARE CONFIG. FVH

PT AVG	ALPHA ALFA' ALF C	B-1 RHO*100 L/D,E	Q V,KTS V/OR	LIFT,U CL CLR	DRAG,U CD CXR	SIDE F,U CY CYR	PITCH,U CM CMY	YAW,U CN CMZ	ROLL,U CROLL CMX	HP CP CPO	OMEGA*R CQ CQO	TEMP M,OHR M,AT	NOTES RPM THETA
1	0.00	0.00	28.91	123.	353.	-14.	-103.	315.	60.	0.0	0.0	81.0	
1	-70.84	0.2252	94.95	0.1431	0.4119	-0.0158	-0.0091	0.0279	0.0053	0.0000000	0.0000000	0.0000	0.
	0.00	0.35	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
2	-3.00	0.00	28.89	43.	348.	2.	207.	41.	45.	0.0	0.0	83.0	
1	-83.03	0.2252	94.91	0.0497	0.4064	0.0018	0.0184	0.0036	0.0040	0.0000000	0.0000000	0.0000	0.
	-3.00	0.12	0.0000	0.000000	-0.000000	0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
3	-5.00	0.00	28.89	13.	348.	21.	239.	-165.	263.	-0.0	0.0	81.0	
1	-87.94	0.2252	94.91	0.0146	0.4064	0.0240	0.0212	-0.0146	0.0234	-0.0000000	-0.0000000	0.0000	0.
	-5.00	0.04	0.0000	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
4	-7.00	0.00	28.89	-28.	342.	28.	454.	-210.	375.	-0.0	0.0	80.0	
1	-94.60	0.2256	94.32	-0.0322	0.3994	0.0322	0.0403	-0.0186	0.0333	-0.0000000	-0.0000000	0.0000	0.
	-7.00	-0.08	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
5	-9.00	0.00	28.89	-88.	344.	41.	822.	-311.	667.	-0.0	0.0	80.0	
1	-104.29	0.2256	94.82	-0.1023	0.4017	0.0474	0.0730	-0.0276	0.0592	-0.0000000	-0.0000000	0.0000	0.
	-9.00	-0.25	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
6	-11.00	0.00	28.89	-128.	349.	43.	1083.	-460.	614.	-0.0	0.0	80.0	
1	-110.10	0.2256	94.82	-0.1491	0.4076	0.0497	0.0962	-0.0408	0.0545	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.37	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
7	-13.00	0.00	28.89	-188.	353.	25.	1574.	-243.	750.	-0.0	0.0	80.0	
1	-118.01	0.2256	94.82	-0.2193	0.4122	0.0287	0.1397	-0.0216	0.0666	-0.0000000	-0.0000000	0.0000	0.
	-13.00	-0.53	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
8	0.00	0.00	54.28	168.	685.	-35.	-46.	796.	211.	0.0	0.0	80.0	
1	-76.25	0.2228	130.76	0.1043	0.4261	-0.0240	-0.0022	0.0376	0.0100	0.0000000	0.0000000	0.0000	0.
	0.00	0.24	0.0000	0.000000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
9	-3.00	0.00	54.18	58.	673.	-30.	663.	359.	481.	0.0	0.0	82.0	
1	-85.11	0.2220	130.89	0.0359	0.4193	-0.0184	0.0314	0.0170	0.0228	0.0000000	0.0000000	0.0000	0.
	-3.00	0.09	0.0000	0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
10	-5.00	0.00	54.39	-13.	674.	-22.	741.	56.	608.	0.0	0.0	82.0	
1	-91.06	0.2220	131.15	-0.0078	0.4163	-0.0134	0.0349	0.0027	0.0287	0.0000000	0.0000000	0.0000	0.
	-5.00	-0.02	0.0000	-0.000000	-0.000000	-0.000000	0.000000	0.000000	0.000000	0.0000000	-0.0000000	0.0000	0.0
11	-7.00	0.00	54.32	-83.	671.	-5.	1091.	-220.	710.	-0.0	0.0	83.0	
1	-97.01	0.2216	131.19	-0.0513	0.4170	-0.0028	0.0515	-0.0104	0.0335	-0.0000000	-0.0000000	0.0000	0.
	-7.00	-0.12	0.0000	-0.000000	-0.000000	-0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
12	-9.00	0.00	54.25	-158.	668.	28.	1698.	-575.	798.	-0.0	0.0	83.0	
1	-103.28	0.2216	131.10	-0.0981	0.4157	0.0171	0.0803	-0.0272	0.0377	-0.0000000	-0.0000000	0.0000	0.
	-9.00	-0.24	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0
13	-11.00	0.00	54.21	-238.	677.	32.	2086.	-580.	988.	-0.0	0.0	83.0	
1	-109.34	0.2216	131.04	-0.1480	0.4216	0.0196	0.0987	-0.0275	0.0468	-0.0000000	-0.0000000	0.0000	0.
	-11.00	-0.35	0.0000	-0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	-0.0000000	-0.0000000	0.0000	0.0

ZERO VALUES IN	ALPHA	B.1	FL+	RL+	D	FL-	RL-	CF	CR	Q	OMEGA	POW
TOTAL COUNTS..	0.	501.	11399.	11519.	15203.	3256.	3178.	9203.	9200.	4.500	511.	495.
TOTAL PHYS. UNITS..	0.0	25.0	56995.0	57592.5	15202.5	8140.0	7945.0	9202.5	9200.0	0.112	1409.	

T = 3 CP - CQ.

PITCHING MOMENT COEFFICIENT, C_m/σ
(Tail Boom Support Strain Gage Balance Data)

RUN	CONFIG.	DATA POINT	α_S	C_m/σ
2	FRBVHT	1	-3	.00161
		2		.00202
		3		.00279
		4		.00298
		5	-8	.00339
		6		.00371
		7		.00408
		8	-13	.00503
		9		.00439
		10		.00594
		11	-3	.00208
		12		.00255
		13		.00270
		14	-13	.00630
		15		.00619
		16		.00633
		17		.00779
		18	-8	.00424
		19		.00545
		20		.00433
		21		.00362
3	FRBVHT	1	0	-.00061
		2	0	-.00075
		3	-3	.00132
		4		.00155
		5		.00202
		6		.00236
		7	-8	.00370
		8		.00433
		9		.00485
		10		.00551
		11	-12	.00630
		12		.00693
		13		.00755
9	FRBVH	1	0	.00050
		2	-9	.00447
		3		.00422
		4		.00368
		5		.00448
		6		.00495
		7		.00425
		8		.00449
		9		.00441
		10		.00460
		11		.00487
		12	-9	.00429
		13	-7	.00414
		14	-5	.00449
		15	-11	.00432
9	FRBVH	16	-3	.00233
		17		.00207
		18		.00260
		19		.00250
		20		.00282
		21		.00224
		22		.00278
		23		.00058
		24		.00310
		25		.00436
		26		.00242
		27		.00231
		28		.00213
		29		.00250
10	FRBVH	1	-3	.00219
		2		.00194
		3		.00398
		4		.00198
		5		.00357
		6		.00581
		7		-.00009
		8		-.00052
		9		.00187
		10		.00115
		11		.00070
		12		.00204
		13		.00253
		14	-3	.00203
		15	-1	.00139
		16	-5	.00239
		17	-7	.00295
		18	-9	.00490
		19		.00550
		20		.00507
		21		.00424
		22		.00381
		23		.00461
		24		.00442
		25		.00468
		26		.00480
		27		.00495
		28		.00451
		29		.00671
		30		.00899
		31		.00406
		32		.00429
		33		.00409
		34		.00458
		35		.00499
		36		.00524
		37		.00432

(continued next page)

PITCHING MOMENT COEFFICIENT, C_m/σ

(Tail Boom Support Strain Gage Balance Data)

RUN	CONFIG.	DATA POINT	α_S	C_m/σ
10		38	-7	.00418
		39	-5	.00502
		40	-11	.00422
		41	-9	.00447
11	FRBVH	1	-8.3	.00423
		2		.00534
		3		.00768
		4		.00293
		5		.00107
		6		.00412
		7		.00402
		8		.00414
		9		.00402
		10		.00432
		11		.00411
		12		.00221
		13		.00030
		14		.00690
		15		.00953
		16		.00387
		17		.00349
		18		.00149
		19		.00432
		20		.00493
		21	-8.3	.00424
		22	-6	.00451
		23	-3.8	.00573
		24	-8.3	.00416
		25	-2.6	.00185
		26		.00446
		27		.00306
		28		.00152
		29	-3	-.00044
		30		.00074
		31		.00198
		32		.00343
		33		.00498
		34		.00686
		35		.00221
		36		.00362
		37		.00055
		38		-.00016
		39		.00197
		40		.00110
		41		.00047
		42		.00229
		43		.00275
		44	-3	.00194
12	FRBVH	1	-3.3	.00118
		2		.00157
		3		.00169
		4		.00176
		5		.00208
		6		.00206
		7		.00150
		8		.00147
		9	-3.3	.00233
		10	-1	.00287
		11	-5.3	.00165
		12	-6.3	.00159
		13	-3.3	.00224
13	FRBVH	1	-3	.00213
		2		.00210
		3		.00427
		4		.00109
		5		.00007
		6		.00223
		7		.00037
		8		-.00108
		9		.00313
		10		.00513
		11		.00183
		12		.00149
		13		.00124
		14		.00224
		15		.00262
		16	-3	.00232
		17	0	.00217
		18	-5	.00226
		19	-7	.00220
		20	-9	.00244
		21		.00513
		22		.00539
		23		.00353
		24		.00235
		25		.00369
		26		.00244
		27		.00080
		28		.00578
		29		.00773
		30		.00426

PITCHING MOMENT COEFFICIENT, C_m/σ
(Tail Boom Support Strain Gage Balance Data)

RUN	CONFIG.	DATA POINT	α_S	C_m/σ
14	FRBV	1	-3	-.00239
		2	-5	-.00281
		3	-7	-.00332
		4	0	-.00124
		5	-3	-.00139
		6	-3	-.00182
		7	-3	.00023
		8	-9	-.00160
		9	-11	-.00234
		10	-7	-.00117
		11	-6	-.00074
		12	-9	-.00168
		13	-9	-.00286
		14	-11	-.00371
		15	-7	-.00187
		16	-5	-.00068
		17	-9	-.00282
		18	-3	-.00128
		19	-5	-.00226
		20	-7	-.00316
		21	-1	-.00057
		22	-3	-.00145
		23		-.00224
		24		-.00021
		25		-.00408
		26	-3	.00158
		27	-4	-.00229
		28	-2	-.00074
		29	-6	-.00368
		30	-4	-.00230
		31		-.00287
		32		---
		33		-.00298
		34		-.00481
		35	-8.7	-.00488
		36	-10.4	-.00591
		37	-6.4	-.00354
		38	-4	-.00257
		39		-.00144
		40		-.00037
		41	-4	-.00304
		42	-3	-.00248
		43		-.00517
		44		+.00049
		45		-.00231

RUN	CONFIG.	DATA POINT	α_S	C_m/σ
15	FRB	1	-3	-.00103
		2	-3	-.00165
		3	-4	-.00231
		4	--	
		5	-1.8	-.00108
		6	-0.8	.00036
		7	-2.6	-.00187
		8	-3.5	-.00267
		9	-1	-.00020
16	FRB	1	0	---
		2		---
		3		---
		4		---
		5	-2.6	-.00226
		6	-3.3	-.00261
		7	-1.5	-.00104
		8	-4	-.00345
		9	-4	-.00307
		10	-6	-.00452
		11	-2.6	-.00184
17	FRB	1	0	---
		2	-3	---
		3		-.00244
		4		-.00300
		5		-.00321
		6		-.00185
		7		-.00105
		8		-.00254
18	FRB	1	0	-.00073
		2	0	-.00060
		3	-4.5	-.00428
		4	-4.5	-.00405
		5	-6.2	-.00450
		6	-7	-.00469

PITCHING MOMENT COEFFICIENT, C_m/σ and C_m^*

(Tail Boom Support Strain Gage Balance Data)

RUN	CONFIG.	DATA POINT	α_S	C_m/σ
19	FR	1	0	-.00047
		2	-3	-.00079
		3	-6	-.00150
		4	-8	-.00155
		5	-10	-.00191
		6	-12	-.00209
		7	-13	-.00223
		8	0	-.00013
		9	0	-.00061
		10	-3	-.00175
		11	-5.3	-.00272
		12	-8.4	-.00367
		13	-10	-.00423
		14	0	-.00065
		15	0	-.00094
		16	-2.6	-.00252
		17	-5.7	-.00393
		18	-8.2	-.00513
		19	-10	-.00576
		20	0	-.00056
		21	0	-.00078

RUN	CONFIG.	DATA POINT	α_S	C_m^*
20	FRV	1	-3	.0177
		2	-5	-.0352
		3	-10	-.0575
		4	-7	-.0447
		5	-5	-.0345
		6	-3	-.0223
		7	0	-.0064
		8	3	.0141
		9	-13	-.0600
		10	-11	-.0597
		11	-9	-.0449
		12	-7	-.0379
		13	-5	-.0299
		14	-3	-.0169
		15	0	-.0029
		16	3	.0191
21	FRVH	1	3	-.0834
		2	0	-.0547
		3	-3	-.0349
		4	-5	-.0194
		5	-7	-.0006
		6	-9	.0251
		7	-11	.0531
		8	-13	.0761
		9	3	-.0725
		10	0	-.0528
		11	-3	-.0379
		12	-5	-.0228
		13	-7	-.0063
		14	-10	.0264

APPENDIX B

PHYSICAL DESCRIPTION OF MAIN ROTOR AND CONTROLS

The main rotor is a four-bladed, fully articulated system having a lead-lag hinge located 16.19 inches from the C_L of rotation and a flapping and feathering hinge located 5.50 inches from the C_L of rotation. Centrifugal force is transmitted from the blade through the lead-lag hinge to the outboard end of a pack of thin stainless steel straps and is reacted by the centrifugal force of the opposite blade, so that the hub is not relied on to carry the centrifugal force. The inherent flexibility of the laminated strap packs permits flapping and pitching motions to be accommodated by structural deformations. The flapping and feathering hinge serves primarily as an alignment point; a self-lubricated spherical bearing free to slide on a pin provides freedom for all angular motions and permits elongation of the straps due to centrifugal force.

The straps are of high strength stainless steel strip, with teflon sheets between the laminations to prevent fretting. The hub is a premium strength aluminum alloy casting, mounted on tapered roller bearings which transmit thrust and hub moments to the mast. A six-inch radius curved surface (shoe) is provided to permit wrapping of the straps due to flapping and pitching motions.

The blade is a composite structure consisting of: 2024-T4 aluminum extruded spar, 2024-T3 aluminum skin, 2024-T3 aluminum channel, 2024-T3 aluminum strip, and extruded brass weight at the leading edge. All these parts are bonded together. At the blade tip, a bronze weight is bonded and riveted to the blade. At the root of the blade, the upper and lower root fittings are bonded and bolted to the blade. At this location, the blade

has reinforcement from the 2024-T3 aluminum doublers. A 2014-T6 aluminum forging is attached to the root of the blade for taking the damper arm load. The blade has -8° twist and no taper. Figure B-1 presents significant blade dimensions, the flapwise inertia, and the chordwise inertia.

The blade has an NACA 0015 airfoil section of 6.83 inch chord. With the trailing edge extension the overall chord is 7.21 inches. Figures B-2, -3, -4 present the spanwise distribution of weight, chordwise c.g. location, and chordwise moment. Table B-I presents a summary of the Rotor Mass properties.

The main rotor hub controls are illustrated in Fig. B-5. Cyclic and collective pitch motions of the rotating swashplate are carried to the integral horns on the pitch housings by short links with rod end bearings. The rotating swashplate is driven by links fastened to the hub. The rotating swashplate is connected to the non-rotating swashplate through a double row ball bearing. The outer race of this bearing is a part of the rotating swashplate; the inner race is a part of the non-rotating swashplate. The non-rotating swashplate tilts on a self-lubricated bearing surface moving against a hard surface on the main rotor mast. Rotation of the non-rotating swashplate is prevented by one of the links that transmit control motion from the mixer assembly.

ANALYSIS
PREPARED BY R. E. Rohtert
CHECKED BY S. V. LaForge

Aerodynamic Tests of an Operational OH-6A Helicopter in the Ames 40' X 80' Wind Tunnel

TABLE B-I

SUMMARY - ROTOR MASS PROPERTIES

	UNITS	REMOVABLE BLADE	LEAD-LAG BLADE	FLAPPING BLADE
WEIGHT	Lbs.	26.96	28.61	37.25
CENTER OF GRAVITY				
Pitch Axis (.25C)	In.	0.03	0.04	0.21
Leading Edge	In.	1.74	1.75	1.91
Center Line of Rotation	In.	80.53	76.85	61.74
First Moment	Lb.-In.	2171	2199	2300
MOMENTS OF INERTIA ABOUT				
Center Line Rotat & .25C	Lb-In.Sq.		239883.	241256.
	Sl-Ft.Sq.		51.78	52.07
L-L Hinge & .25C	Lb-In.Sq.		I_{LL} = 176192.	
(Sta 16.19)	Sl-Ft.Sq.		38.03	
Flap Hinge & .25C	Lb-In.Sq.			217083.
(Sta 5.50)	Sl-Ft.Sq.			46.86
Pitch Axis (.25C)	Lb-In.Sq.		99.72	173.33
	Sl-Ft.Sq.		.0215	.0374
CENTROIDAL MOM OF INERTIA				
Flapping	Lb-In.Sq.	64529.	70865.	99162.
	Sl-Ft.Sq.	13.93	15.30	21.40
Pitching	Lb-In.Sq.	94.42	98.24	170.63
	Sl-Ft.Sq.	.0204	.0212	.0368
Lead-Lag	Lb-In.Sq.	64582.	70919.	99269.
	Sl-Ft.Sq.	13.94	15.31	21.43
PRODUCT OF INERTIA				
About Center of Rotat	Lb-In.Sq.	-73.	-65.	10.
& .25 Chord			MLL 1735	

ITEM	WEIGHT (LBS)	IZ (LB-IN SQ)*
ROTATING HUB & RETENTION ITEMS FROM HUB CENTER LINE TO FLAP HINGE	29.00	464.

IZ = W(R SQD), R = 4.00 IN

IZ = 29.00 (16.00) = 464. Lb-In Sq

*. FLAPPING BLADES	149.01	965025.

WT = 37.25 X 4. = 149.01 Lbs

IZ = 241256. X 4. = 965025. Lb-In Sqd

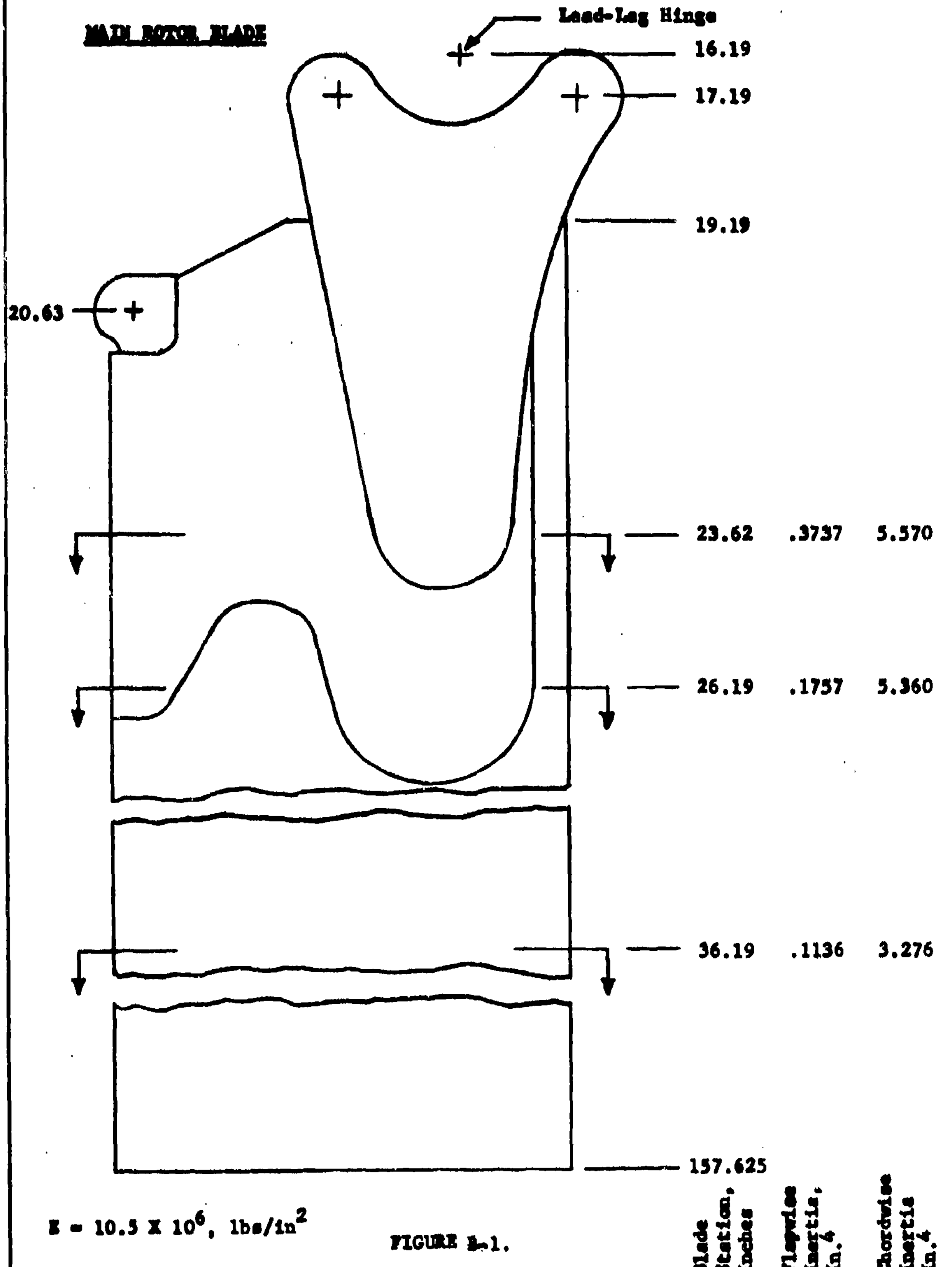
TOTAL ROTOR GROUP	178.01	965489. (208.39 Sl-Ft Sq)

* Weight & Moment of Inertia About Rotor Centerline

Best Available Copy

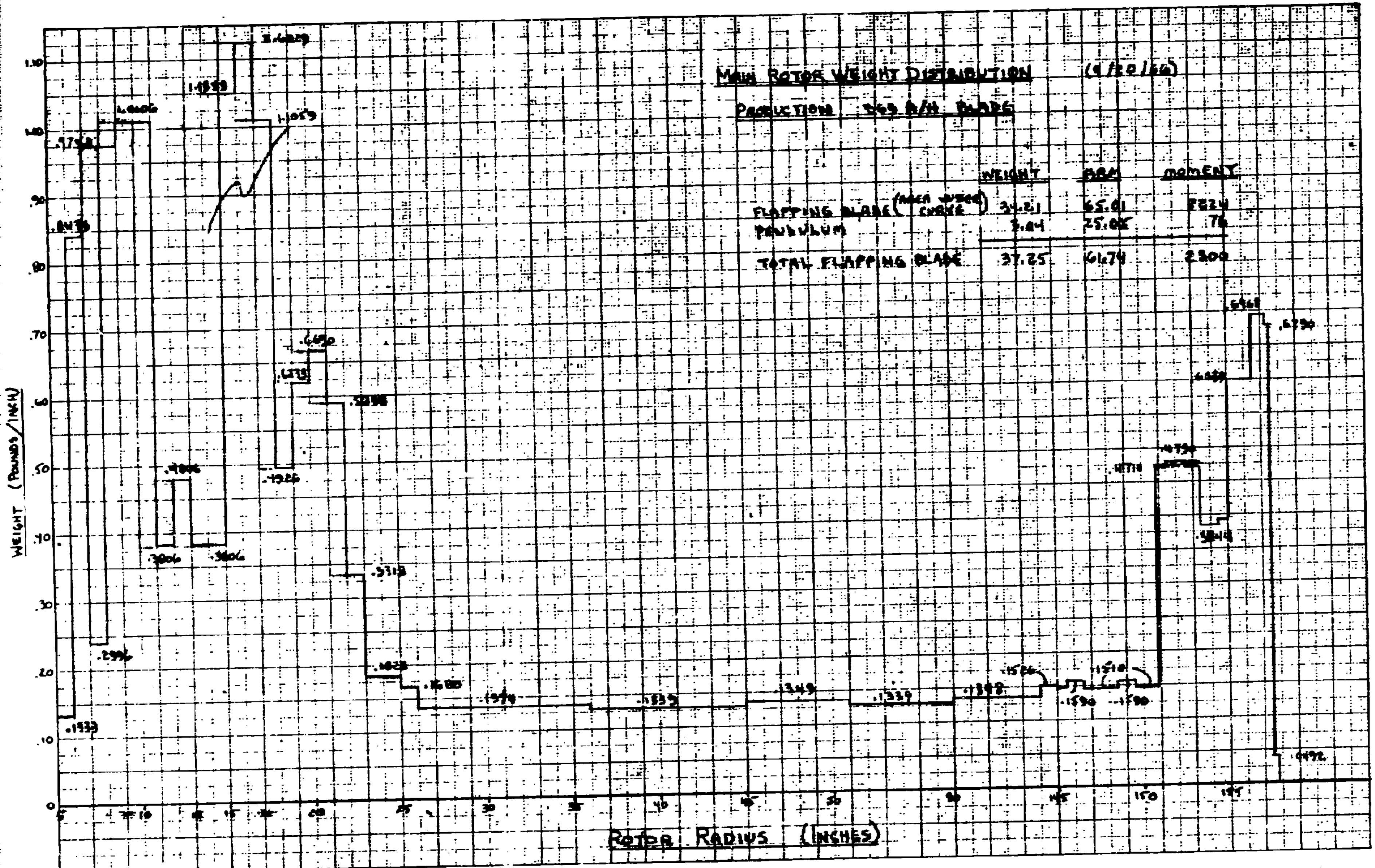
ANALYSIS
PREPARED BY R. E. Rehtert
CHECKED BY S. V. LaForge

Aerodynamic Tests of an Operational OH-6A Helicopter in the Ames 40' X 80' Wind Tunnel



$E = 10.5 \times 10^6$, lbs/in^2

FIGURE B-1.


MAIN ROTOR WEIGHT DISTRIBUTION
(9/20/66)
PRODUCTION
BLADE
WEIGHT
ARM
MOMENT
FLAPPING BLADE (AREA UNDER CURVE)
34.21
65.01
PENDULUM
3.04
25.05
TOTAL FLAPPING BLADE
37.25
61.74
2300
WEIGHT (POUNDS/INCH)
ROTOR RADIUS (INCHES)

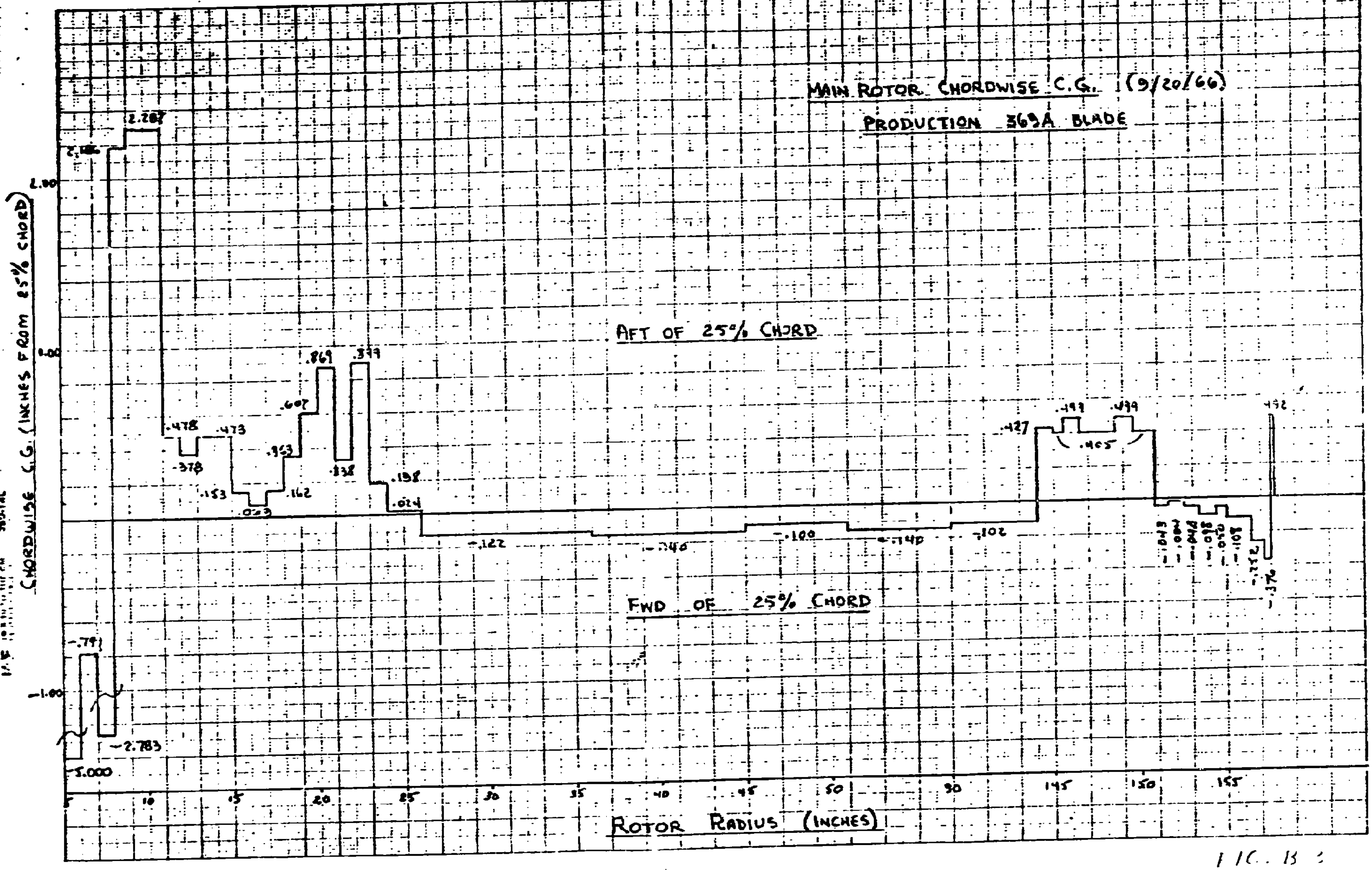

MAIN ROTOR CHORDWISE C.G. (9/20/66)
PRODUCTION 369A BLADE
AFT OF 25% CHORD
FWD OF 25% CHORD
CHORDWISE C.G. (INCHES FROM 25% CHORD)
ROTOR RADIUS (INCHES)
2.00
1.00
-1.00
2.287
-.478
.473
-.378
.153
.023
.353
.162
.607
.869
.338
.379
.198
.024
-.122
-.100
-.102
.427
.499
.465
-.376
-.232
-.108
-.043
10
15
20
25
30
35
40
45
50
90
145
150
155

FIG. B-3

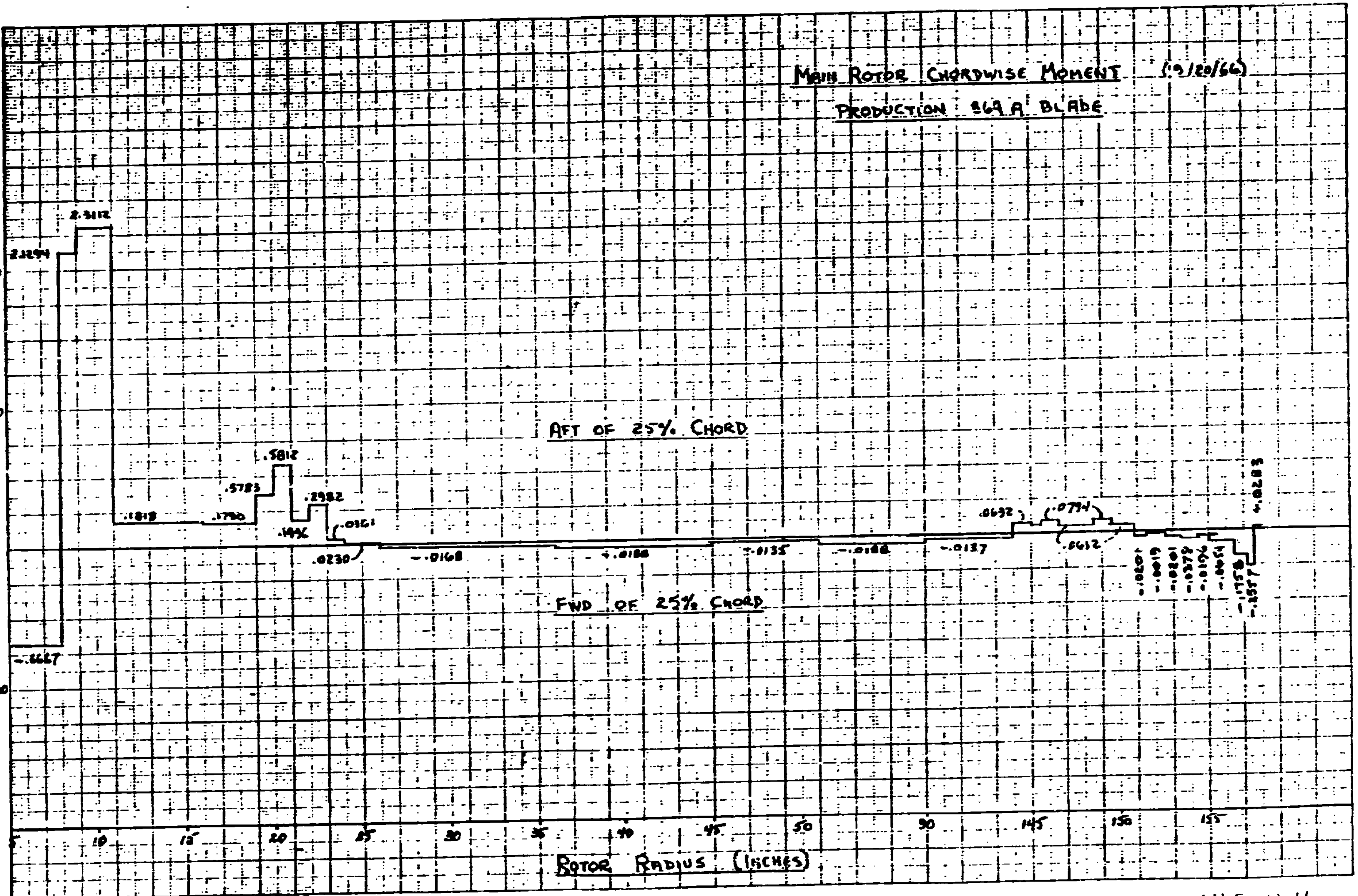

MAIN ROTOR CHORDWISE MOMENT (9/20/66)
PRODUCTION 869 A BLADE
AFT OF 25% CHORD
FWD OF 25% CHORD
CHORDWISE MOMENT (INCH POUNDS/INCH)
ROTOR RADIUS (INCHES)
2.00
1.00
-1.00
2.3112
.5812
.5783
.2982
.1819
.1790
.0361
.0230
-.0168
-.0137
.0692
.0794
.0612
+.0283

FIG. B4

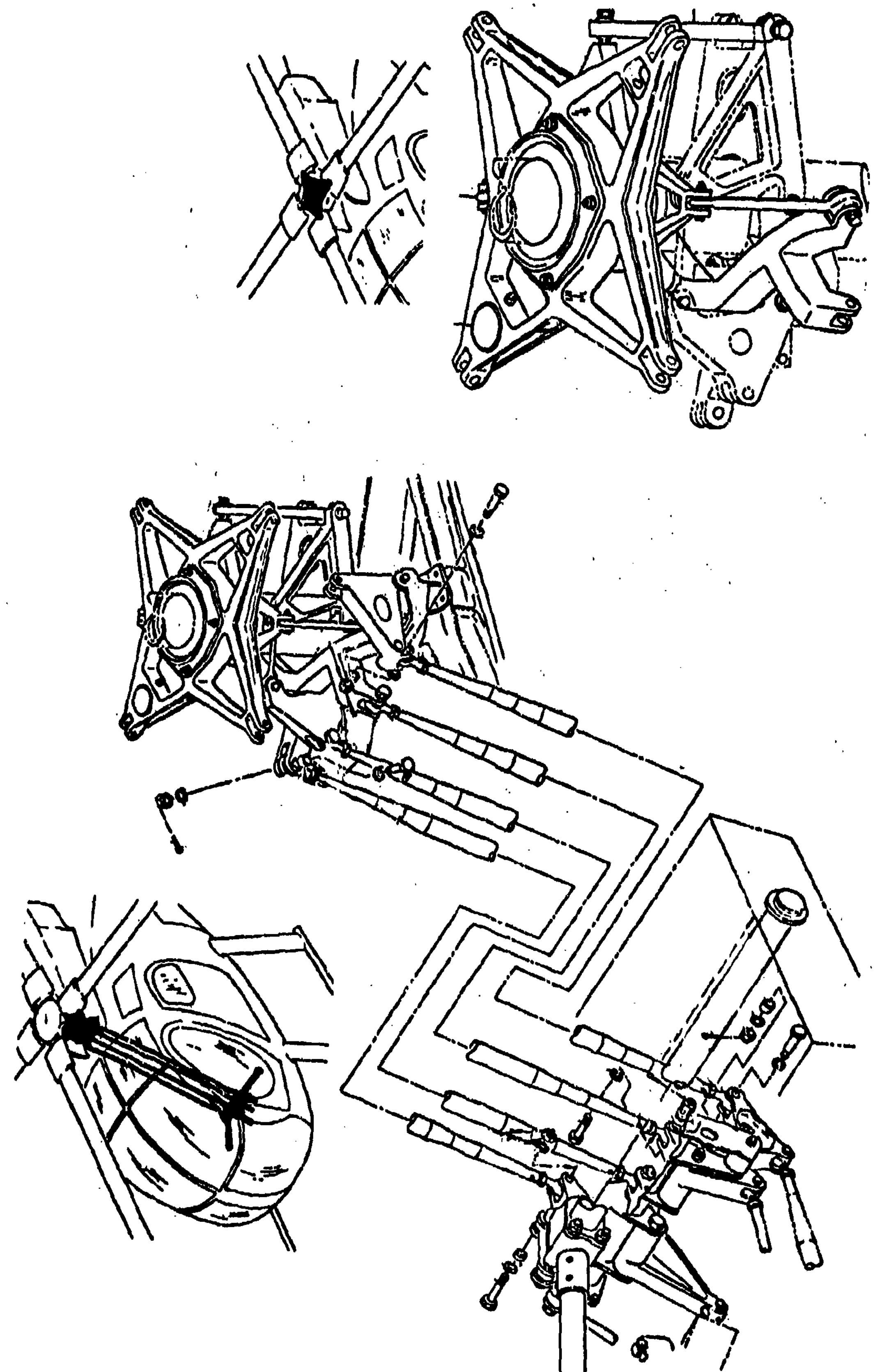


FIGURE B-5 - MAIN ROTOR CONTROLS & HUB